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F.O.

424

REPORTS AND MEMORANDA

RELATIVE TO

1876-1877

DEFENCE OF CONSTANTINOPLE

AND

OTHER POSITIONS IN TURKEY,

ALSO ON

ROUTES IN ROUMELIA.

38

PRINTED AT THE WAR OFFICE,
BY HARRISON AND SONS,
Printers in Ordinary to Her Majesty.

1877.

[0631]

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INSTRUCTIONS FOR MAJOR AND BREVET LIEUT.-COLONEL HOME, C.B., ROYAL ENGINEERS.

Major and Brevet Lieut.-Colonel Home will proceed to Constantinople, accompanied by Captain Fraser, R.E., and, on arrival, will report himself to H. M. Ambassador, who has been instructed to render him every assistance in the performance of the very responsible duties entrusted to him. He will show his instructions to His Excellency, and act under his directions in communicating with the Turkish authorities.

His reports will be addressed to the Inspector-General of Fortifications, for the information of H.R.H. the Field-Marshal Commanding in Chief, and the Secretary of State for War, and sent through the Military Attaché, who will communicate them to His Excellency, with such observations as he may deem necessary.

He will examine the Peninsula between the Black Sea and Sea of Marmora, bounded on the east by the Bosphorus; and determine the best position to be taken up for defence against an enemy advancing from the westward.

It is desirable that the line to be selected should be the strongest possible, but, as the force which might be employed in its defence may be limited, a preference should be given to that position which can be firmly held by the least number of men. It should be at a considerable distance in advance of Constantinople, and afford facilities for the encampment of a large army in its rear, outside the walls of the town, and a safe refuge for the population of the country, who, if the works were menaced, might be expected to retire within it.

It may be assumed that the flanks resting on the two seas will be in security.

From the best information at hand, it would appear that a line extending from the Sea of Marmora, near Buyuk-Checkmejeh on the left, along the heights in rear of the Kara Su, across the Strandja, or Lesser Balkans, to Lake Derkos, and thence across the neck of land between that lake and the Black Sea, affords a favourable position for fulfilling the above purposes.

If this should be so, it might be of great advantage to secure, by a work or works on the heights to the westward, the use of the harbour of Buyuk-Checkmejeh, at which troops might be landed in close proximity to the line of defence, and to the Constantinople railroad.

The object being to prepare a line of defence which a British force, on landing, might find ready for its reception, it is desirable that the plans should be made in such detail that a few officers, arriving in the country, might at once proceed with the construction of the works, with the manual labour to be procured on the spot.

The line should therefore consist of a series of redoubts, of respectable profile, occupying the most important points along it, or in connection with it. These works should, as a rule, be enclosed works of a simple trace, in which all avoidable complications of construction, which would require much skilled supervision, should be avoided. They should also, as far as possible, be capable of containing garrisons, in which the minimum force requisite to hold them should coincide with the battalion (the unit of organization and command), with a proportion of Artillery.

The armament will consist of guns of position, of which 70 or 80 40-prs. will probably be available; these will be supplemented by the Field-Artillery accompanying the force, for which suitable positions will be selected. The construction of shelter-trenches between or in advance of the principal works might be left until after the arrival of the troops, but their trace and extent might be indicated.

The plans of the lines should be illustrated by sections of the proposed

profiles for determining which it may be necessary to sink trial pits to ascertain the depth and nature of soil.

The plans should also be accompanied by a report showing the number and proposed distribution of the troops requisite for their occupation and defence. This report should be based on the approved organization of a field army, particular positions being assigned to battalions, brigades, and divisions, with adequate reserves properly posted, the positions of all being shown on the plans.

In determining these points great consideration will have to be given to the question of water supply, as to which reports state that the streams in this part of Turkey are frequently dry during summer, although water is often to be found in considerable quantities a few feet below the surface in the valleys.

NOTE.—It has been particularly noticed with respect to Buyuk-Checkmejeh that the existing supply from wells might be greatly added to, by sinking fresh wells, water being abundant within a few feet of the surface.

The question should be considered of the possibility of carrying a branch railway up from the Adrianople—Constantinople line, along the rear of the proposed line of works, and if found practicable an estimate of the materials required, distinguishing those which can be procured on the spot from those which should be sent from England should be given, and a report of the manner in which the work should be executed and the probable time for its completion.

This railroad should if possible be concealed from view from the ground in front of the line of works. Good roads also for the free communication of the troops along the line and from their encampments or cantonments to the front should be provided to a certain extent where necessary.

NOTE.—It is believed that the soil is generally of a thick loamy nature, very soft in wet weather, readily cut up by heavy traffic, which soon makes the road almost impassible for heavy loads. Few made roads exist and materials for road making are reported to be generally deficient. It is possible some banks of gravel may have been opened up in making the railroad, but if not it may be useful to note that in a report on roads in Turkey it is stated that good road material is to be procured in abundance at Kutchuk-Checkmedjeh.

As the occupation of this line, if it take place, will probably not be of long duration, it will not be necessary, at any rate at first, to hut the force in a permanent way in wooden huts, but every information should be obtained as to the methods in use in the country, and the means that can be taken for sheltering men in mud huts after the manner which is common in some parts of Turkey, and which are known to afford very comfortable shelter. It is possible that such huts might be prepared by the natives of the country before the arrival of the troops. The supply of material for their construction will have to be considered.

The question of hospital accommodation will also have to be considered. It is possible that some buildings may be found in some of the villages in rear suitable for field hospitals; if not, a small provision of huts of a somewhat superior character may be necessary; but it may be presumed that severe cases will be treated on board hospital ships, which will be provided.

It will be necessary that all roads leading from the front up to the position should, if possible, be sketched, and the names of villages and particular features recorded thereon.

As the position will be in the vicinity of a large city, comprising a population of a million inhabitants of mixed creeds, among whom difficulties may possibly arise, it is desirable that all roads leading to the Bosphorus should be reconnoitred and positions selected, which the force holding the lines might, in case of necessity, take up to command and act against the town. This consideration also renders it most desirable that the troops should not depend for their supplies on the town, but rather on a port on the Sea of Marmora, either Kutchuk-Checkmajeh or near the Government Powder Works, where wharves are believed to exist.

The railroad also in front of the position selected for defence should be examined throughout its whole length to its western terminus at Derbend, beyond Tatar Bazardjik, with a view to its demolition in case of an enemy's

advance. As this railroad is not in connection with any other railroad in Europe, and therefore foreign rolling-stock cannot be brought upon it without great labor, it is all important that the rolling-stock, including engines, carriages, and wagons, should be withdrawn from the front before they can possibly be seized by an enemy, but as the railroad itself would form a valuable line of communication for troops marching in a country generally devoid of roads, it is of great consequence that all bridges should be destroyed in any retreat that might be made, for which it is most desirable that preparations should be made beforehand.

In addition to what is required for the defence of Constantinople, it is essential that the entrance into the Sea of Marmora for the fleet, through the Dardanelles, should be secured from a land attack For this purpose the ground should be carefully examined and the plans made for holding the Chersouesus or Gallipoli Peninsula, as was done by the Anglo-French works in 1854, but as the means for carrying on war have greatly changed since then by the introduction of rifled artillery and breach-loading small-arms, it may be necessary to occupy the ground in a different manner from that in which it was then taken up.

This position is of the highest importance in the event of a British Expedition being sent into the Sea of Marmora and Black Sea, and the defences should therefore be of the strongest nature, but an effort should be made to accomplish the desired end with the least possible force, so as to leave the force disposable for the occupation of the lines in front of Constantinople as large as possible.

The observations with regard to place of disembarkation, water supply, and free communication along the line, made with reference to the lines in front of Constantinople, apply equally in this case.

The report should contain a tabular statement of the troops required for both of these lines, distinguishing those who occupy them from the reserves which must be held in hand to strengthen points that may be threatened, also of the guns of position for arming the principal works. As the population of the Chersonesus is very sparse, the method of constructing the works for its defence will require special consideration, as it is most desirable that they also should be capable of construction by native labour before the arrival of the troops.

The report also should be accompanied by a statement of the tools, implements, and stores which may be required, distinguishing those which can be procured locally, from those which should be sent from England. In making this list, attention should be given to the fact that the natives are not accustomed to the heavy tools in ordinary use in England, and that it may therefore be necessary to provide special tools for them.

In their reports and letters the officers are requested to print all names of places in Italian letters, and to employ as far as possible the orthography adopted by Kiepart in his map.

Herewith is a list of maps, plans, and reports which will be supplied to Lieut.-Colonel Home.

Lieut.-Colonel Home is authorized to employ interpreters or such other persons, together with such means of conveyance as may be necessary to enable him to perform these services. Instructions will be sent to Her Majesty's Ambassador at Constantinople to supply him with all requisite funds, of which he will render account in the usual manner, supported by receipts when practicable as vouchers for his expenditure.

It is desirable that as soon as the ground comprised in these two lines of defence has been reconnoitred sufficiently to determine their position and nature, a rough hand sketch should be sent giving a general idea of them, which may be altered afterwards, according as the more special study of the ground may dictate, accompanied by a statement of the force requisite for holding them, and of the guns required for their armament, together with such other information as it may be desirable Her Majesty's Government should possess, in case events should require a speedy occupation of the country.

Lieut.-Colonel Home is also requested to send home as soon as possible a report of the present state of the defences of the Dardanelles and Bosphorus against attack by sea, and of their armament, accompanied by a statement of

any steps he thinks should be taken to place them in such a condition that they may resist attack.

When the above reports have been furnished, it may be desirable to examine the ground in front of Silivri, with a view to entrenching a position in front of it, from which, in the event of operations being taking to force the lines covering Constantinople, a movement might be made upon the flanks or rear of the enemy. This, however, is an after-consideration, and need not occupy the attention of Lieut.-Colonel Home until his reports have been completed on the other questions referred to in these instructions.

J. L. A. SIMMONS.

26th October 1876.

List of Plans to accompany Instructions to Lieut.-Colonel Home, C.B., R.E.

4 maps of Turkey (Kiepart's) mounted.
4 sets of Admiralty charts of the coast from the Danube to the Greek frontier.
12 maps of the Constantinople Peninsula.
3 copies of Von Moltke's map of Constantinople.
12 maps of the Gallipoli Peninsula.
12 sets of road sketches from Constantinople to Enos by Adrianople.
3 sketches of ground near Buyuk-Checkmajeh, F. 74 on the Inspector-General of Fortifications' Register.
Sketches of Buyuk-Checkmajeh, K K 2 on the Inspector-General of Fortifications' Register.
Reports on roads Adrianople to Enos $\frac{\text{Reports}}{81}$ Inspector-General of Fortifications' Register.

J. L. A. S.

29th October 1876.

No. 1.

Village of Delijunis (Deli Junus K),
Near Lake Derkos,

Sir, *15th November* 1876.

1. I have the honour to forward herewith sketch sheets of the survey made by Captain Ardagh, R.E., of the position extending from Buyuk Checkmagee (Böjuk-Tschekmedsche) to Kyssyljaly on Captain Ardagh's map, (Kysytkaja on Kiepert's map), and including the village of Jaseren, together with a report on the same.

Having gone over the ground with the sketch, I am in a position to speak of its extreme accuracy. The labour that the preparation of this sketch of nearly 150 square miles has cost, and the unceasing care displayed by Captain Ardagh in endeavouring to make it as perfect as possible are apparent on inspection. I beg most respectfully to bring this officer's name prominently to notice; I consider that Captain Ardagh has performed the duty entrusted to him in a manner that reflects the greatest credit on him.

2. With Captain Ardagh's report I generally concur, but the state of my knowledge of the ground does not yet qualify me to express a strong opinion on the subject.

3. As Captain Ardagh's health has suffered from his great exertions, and as he is at present unable to continue the work of sketching, I have relieved him of that duty, and detailed Lieutenants Cockburn and Chermside to complete the work to the shores of the Black Sea.

4. Having been, by the kindness of Sir Henry Elliot, placed in communication with the Admiral Commanding Her Majesty's Fleet in these waters, I have arranged with him for an inspection of the defences of the Dardanelles and Bosphorus by an Engineer Officer, in conjunction with a Naval Officer, one copy of the joint report to be addressed to the Admiral, and one copy to me for transmission to you.

5. On the completion of this work, I have arranged for a joint inspection of the landing facilities near the powder manufactory close to Stephanosk, Böjuk Tschekmedsche, Kallikratia, Silivri, Eregli, Rodosto, by an Engineer and a Naval Officer, and for the preparation of projects for improving such landing places as may be definitely settled on.

6. Further, the lake or backwater at the head of the harbour of Böjuk Tschekmedsche and Lake Derkos are to be examined to ascertain if steam launches can be used on them. Steam launches will aid the supply of the troops on the former, and support the defence on the latter.

7. For these duties I have detailed Captain Ardagh. I consider it a matter of no little importance that these questions should be considered jointly with the Navy, and I am desirous of expressing my thanks to the Admiral for the kind way in which he at once declared his readiness to detail an officer and a vessel for these services.

8. I have retained a copy of the survey made by Captain Ardagh, but I would urge strongly the necessity of having the sketch lithographed at once, and a number of copies sent out. It should be done by Mr. Kelly, Chief Draughtsman at the Intelligence Branch. An index map of the whole sketch is enclosed, showing the sheets completed and those wanting to complete. I shall send each sheet to England as it is completed, in order not only that His

Royal Highness may have a correct map before him at the earliest moment, but also that by having the map lithographed, much labour may be spared to the officers on the spot.

9. As this village is the most convenient for working that portion of the sketch still deficient, I shall leave Lieutenants Cockburn and Chermside here, and with Captain Fraser proceed to the left flank, and gradually work to the right, fixing on sites for, and preparing drawings of the various works.

10. I regret much to say that the weather has been exceedingly bad, there has been heavy falls of snow accompanied with very cold northerly winds, which have materially interfered with the examination of the ground. I trust, however, that the survey as far as the Black Sea will be complete by the 15th of next month, by which time a large number of the forts may be determined on.

11. Having ridden twice over the ground, and having had the benefit of Captain Ardagh's intimate knowledge of it, I think it perhaps may not be out of place to offer some remarks on the general military aspect, premising that more experience and increased knowledge may subsequently modify the opinions which I now venture to give.

12. The position from the Sea of Marmora to the Black Sea is undoubtedly one of very considerable strength.

But it is much more extensive than was conceived in England, being 16 miles in length, in place of 13.

From the Sea of Marmora to the village of Kysytkaja (Kyssylyaly in Captain Ardagh's sketch), the position is clearly defined and excellent; up to this point the ground is perfectly open and clear, the sites for works are admirable, with the sloping ground in front that experience has demonstrated to be by far the best.

Beyond the point referred to, the position crosses the Little Balkan range. The ground here is very complicated, and intersected with ravines in every direction. The best position undoubtedly for the line is rather too much in advance, and the position in rear is by no means so good. The whole country here is covered with oak and juniper scrub, some six feet to 10 feet high, this scrub affords much cover, and would have to be cleared.

From the nature of the ground cut up by ravines and valleys in every direction, a considerable number of works will be required in this part of the position.

While these may be smaller than the works on the left, they will yet require many men to man them, and give much trouble in their construction.

13. Having seen this position, I am of opinion that the proposed garrison and armament is insufficient, and that it cannot be held with a smaller force than 65,000 men, supported by 120 guns, in addition to the field artillery.

If the position on the right was as good as that on the left a smaller force might suffice; but, viewing the nature of the ground on the right, and the necessity for holding the ground in advance of Böjük-Tschekmedsche harbour, in order that that harbour may be used, I do not think a small force can be relied on.

As regards the guns—on the right of the position guns of a smaller calibre will answer as well as 40-prs.; indeed, in many places, Gatling guns would do all that is required.

I am also of opinion that some guns larger than 40-prs. should be added.

The total armament would be as follows:—

64-prs.	10
40-prs.	70
20-prs. or 16-prs.	40
Total	120

14. As regards the additional number of men, I venture to bring to notice that a certain number of Mahommedan troops might be sent from India.

The religion common to these troops and the Turks would be an element of strength; and, further, as India and Indian welfare are really at stake, India might fairly be called on to contribute to the cost of a war undertaken for her benefit.

In whatever way the number of men requisite to defend the position be procured, it is desirable that the fact that 65,000 men are requisite should be brought to notice as soon as possible.

15. I beg, most earnestly, to bring to notice the fact, that the telegraph from England to Constantinople passes through foreign, perhaps hostile, countries; that even if messages are allowed to pass through, it will be well worth paying largely to have such messages delayed, or wrongly transmitted, a thing quite possible with a cyphered message.

The importance of a perfectly secure and safe line of telegraph with Constantinople, in case of a war with Russia cannot be exaggerated. Such a line need not be costly, as it could be laid from Malta, *vid* Crete, to the Dardanelles.

16. Attached is a Memorandum on the possible strength of the Russian Army, should war break out.

I have the honour to be,
SIR,
Your most obedient Servant,
R. HOME,
Lieut.-Col. R.E.

The Inspector-General of Fortifications.

MEMORANDUM.

THE following note is submitted:—

1. The actual war strength of the Russian army may be fairly put at about—

Infantry	600,000
Cavalry	100,000
Guns	1,500

These numbers are what form the active army on mobilization. The garrison troops may be put at about 200,000 men. The Caucasus and Transcaucasus would require some 200,000 men, probably 80,000 to 100,000 might be pushed on to Kars and Erzeroum. An army of some 100,000 men must be left in Poland to watch the German and Galician frontier. The Emperor's Guard, Central Asia, and sundry detachments, may take about 100,000 more.

2. The force that may be expected to cross the Pruth may be roughly put at 250,000 men, viz.:—

Infantry	200,000
Cavalry	40,000
Artillery	10,000
Guns	600

On the assumption that Austria is neutral and Roumania friendly, a Rouman force of some 50,000 men may be added; for various reasons it is not likely that this contingent will be of much use. They will probably be used to hold the line of the Danube, and be regarded perhaps as rather doubtful allies.

3. Granting the neutrality of Austria—yet the position of Austria is such

that should she at any moment from any cause change her mind and become hostile when a large Russian force was south of the Danuble, she could inflict such a crushing defeat on Russia, that Russia cannot hazard an advance south of the Danube without leaving a large force in Roumania to watch the passes of the Carpathian Mountains, and check any hostile movement on the part of the Rouman people, and also keep up a communication with Servia; a force of 50,000 men will probably be left for this purpose north of the Danube.

4. The Russians will probably mass their troops about Seuliani and Keschenev, and will probably effect the passage of the Danube near Rustchuk with a force of some 200,000 men of all arms. In such a country like this such an army must move on a broad front, in order that it may find supplies, and use as many roads as possible for bringing up its supplies.

5. Under such circumstances what number of men can Turkey put in the field? It is believed that the maximum number she can dispose of is about 140,000. If the Turkish authorities attempt to hold Bosnia and Herzegovina with a large force, and scatter their troops about in small detachments, they will infallibly lose them, such small detachments and posts being peculiarly exposed to be cut off by guerilla bands.

It is manifest that under the circumstances of a Russian war Turkey must mass her troops and not scatter them, and it appears that the following division of her army would meet the object in view; 80,000 men to hold Schumla, Pravadi, and Varna; with such a force strongly intrenched, the use of all the passes of the Balkan from (and including) Osmanbazar to the Black Sea will be denied to the Russians, and they must either attack the Turks strongly intrenched or leave a large force to contain them; in the former case the Turks might be supported by an English force; in the latter some 80,000 to 100,000 Russians must be left north of the Balkan; placing the number of Russians left between the Balkan and the Danube to contain the Turks at 80,000, a force of some 120,000 would be available to cross the Balkan, but from this number the waste of men incident to every campaign must be deducted, and probably the number would not exceed 110,000 men. This force would attempt the passage of the Balkan *vid* Tirnova, Kesanlik, and Eski Saara. Simultaneously with the Russian advance south of the Danube an advance of the Russo-Servian army from the valley of the Morava on Sophia may be anticipated: to check this force about 40,000 Turks should be posted in a strong position said to exist near Tatar Bazardjyk. This force must, however, retire on Adrianople as the Russians advance on Kesanlik. The junction of the Russo-Servian and Russian army would thus take place about Hermanly, the junction of the Jamboli and Adrianople lines. At this point the Russian commander would have some 150,000 men, but a large number, perhaps 50,000, would be very inferior troops, and in all likelihood an incumbrance rather than a source of strength.

The Duke of Wellington's saying "that in Spain a large army would starve and a small one be beaten" is peculiarly applicable to Turkey. And it is more than likely that a Russian commander having got so far would seek to get rid of the Servian troops and advance only with his best troops, who could not at this point of the campaign be valued at more than about 95,000 men.

To meet these there would be the force that originally was posted in front of Tatar Bazardjyk, originally 40,000 men, now probably reduced to 25,000; the garrison of the Böjuk-Tschekmedsche lines, say 65,000, and the garrison of Constantinople, say 15,000; a force fully capable of holding its own, and even detaching largely to reinforce the Varna force by sea, and so taking the offensive north of the Balkan.

6. It appears, therefore, that in case of war with Russia the Turkish army should be distributed as follows:—

Shumla, Varna, and Pravadi ..	80,000
Tatar Bazardjyk	40,000
Constantinople	15,000
Total	135,000

and that the military possession of the country depends upon holding th following points:—

Schumla, Varna, and Pravadi.

The Böjuk-Tschekmedsche line in advance of Constantinople—in other words, The Bosphorus.

The Gallipoli lines—in other words, The Dardanelles.

7. As regards the Asiatic portion of the Turkish Empire, the distance from the Bosphorus to Alexandropol is so very great, and the country is so difficult, that an advance through it would be the work certainly of two, if not three, summers; indeed, such an advance may be left out of consideration entirely for the present, although we should be prepared for the fall of Batoum, Kars, and perhaps Erzeroum.

R. HOME,
Lieut.-Col. R.E.

16. 11. 76.

[Enclosure in No. 1.

Enclosure in No. I.

REPORT ON THE DEFENSIVE POSITION BETWEEN THE SEA OF MARMARA AND THE BLACK SEA.

By CAPTAIN ARDAGH, R.E.

The Line of Defence.

Constantinople, 15th November 1876.

The main position extends from the round hill at the head of the Backwater, north of Esskidshi Tchiftlik, to the lake of Derkos, in front of Delijunus.

The Kallikratia position lies immediately around that village, and will first be described. The Derkos neck comes last.

The Kallikratia Position.

Assuming the left of the main position to fall on the eastern side of the backwater of Buyuk Tekekmedjé, it will further be necessary to guard the defile over the series of bridges between B. Tekekmedjé and Kalikratia. The bridges should, in any case, be prepared for demolition, but the question still remains—at which end they should be guarded? If held at the inner side they may be demolished by the enemy, and the harbour and roadstead may be, if not commanded, at least annoyed and threatened by him. If held close to the outer end, a *debouche* could not be relied on, and the roadstead might still be subject to an enemy's enterprises. Nothing short of occupying a line in front of the outer end sufficiently advanced to secure a *debouche* out of fire of the enemy's artillery, and to prevent him from occupying ground from whence he might fire on the bay, will be really efficient. But, in addition, the power of being able to move a large body of troops from the western side, would be most advantageous. It would enable them to make a flank movement on the enemy's right, either by the Adrianople road, or along the valley of Kooug Dèré, leading up towards Tchataldja, an operation conferring immense benefit to the defence; as this valley, if not threatened, affords a very excellent position to the enemy from its peculiar formation.

It is a peculiarity of the ground round Kalikratia, that nearly the whole of the slopes are well seen within range either from the sea, west of Kara Burnu, from the harbour, or from the backwater. Consequently, an enemy would find it very difficult to attack a position here, or if he did succeed in taking it, to hold it with any force, however great, so long as the defenders held the sea. There is, therefore, all the less probability that he would attack.

The works I propose are as follows:—

At the Kallikratia look-out perch, a very strong enclosed work, forming the keep and nucleus of the position. A line of small works connected by trenches and emplacements along the apparent horizon westward, from sea to backwater. Baba Burnu hill need not be occupied by more than a post. A small work on the hill, marked 320, south of the saddleback, on the Adrianople road. Two works on the flat eastern spur of Kum Bayère. (It is true that this part is slightly overlooked by the ground in front, but on advancing to the western edge of Kum Bayère it will be found to be out of sight from the central work, and commanded in the same way by the next hill Ayasma Bayère, and so on, as indeed is usually the case in a rolling country, when it is sought to improve a line by advancing it—the same disadvantages recur under different forms.) The look-out perch above the village of Playa should have a strong work, with a small outlying post overlooking the saddleback on the Tchataldja road. This virtually completes the line, but there should be a defensible blockhouse on the top of the Plaghani Baghar to observe the movements of the enemy, and some gun emplacements should be prepared on that hill to fire up the Kooug Dèré. This completes the line.

The soil on all these sites, except the Plaghani Baghar, is a deep loam underlaid by a soft sandy shale, which can easily be excavated without blasting, as far as I can judge. It will stand at a steep slope, and bomb-proofs and magazines may be dug in it without timbering.

The whole country (except the above-named mountain) is under cultivation, and there are extensive vineyards, with which exception it is quite bare and open. Hardly a tree (beyond a few small fruit trees) is to be seen, and there is no timber available for military purposes. The main line of telegraph on the Adrianople road has double posts, thus, and nine lines of wire, which might become useful when it became expedient to remove them, as obstacles. The general section of the hill slops is slightly concave, so that a man on horseback on the very summit can in most cases see the whole of the slopes.

The streams within the area indicated are quite unreliable, being generally dry. There are, however, numerous fountains, and there will be no difficulty whatever in procuring any quantity of water by wells. Norton's tube pump would act well.

The villages are poor and excessively dirty. Troops will be more healthy under canvas, but canvas floors should be sent with the tents, as the whole country is tilled.

Position on east side to defend bridge.

In connection with this position, it will be well to point out that the best site for artillery to defend the bridge on the east side is a small plateau marked by a walnut-tree on the Adrianople road, one mile east of Buyuk-Tchekmedjé.

Bridge of Buyuk Tchekmedjé.

The nature of the separation between the bay and the breakwater, and of the bridges between Kallikratia and Buyuk-Tchekmedjé will be better understood by reference to the water-color sketch enclosed herewith.

Elevation of Bridge, looking north.

The above sketch represents the bridge roughly. It consists of a paved causeway 18 ft. wide, with low parapet walls, all in very fair repair, passing over four consecutive bridges, the westernmost of 9 arches, the others of 5, 7, and 7, respectively. The arches are from 10 ft. to 25 ft. span, and are gothic; all in stone. Outside the bridge the various channels unite in a basin, in which small coasting vessels lie. This communicates with the sea by a channel about 70 yards wide, and carrying about 7 ft. soundings round the eastern shore. A spit projects from the western side. There is a small, very slight pier at Kalikratia, 50 yards long, only available for very light porterage.

Inside the bridge (which is passable only by boats drawing about 3½′ and of 10′ to 12′ beam, unless the channel be improved) there is a nearly continuous line of brush-work raised on a sand bank. A passage might be made along this, but not a good one. It thus appears that, besides the bridge, two other passages may be made—one by bridging the entrance to the basin, 70 yards wide, the other by bridging the gap in the dam about 15 yards.

Backwater, Buyuk Tchekmedjé.

The backwater of Buyuk Tchekmedjé is from 4 to 8 feet deep on an average, and may be relied on for boats of 3½′. Steam launches may navigate it, and rafts of a couple of caiques may be made to carry a gun. It stretches up from the bridge for 4½ miles; at first in a northerly direction, then trending towards the north-west. In the middle, at the mouth of the Kooug Dèré, it narrows to 1,000 yards, while it is 2,200 yards wide at the broadest part below, and 1,800 yards wide at the broadest part above.

The shores are generally very flat, excepting only where the Plaghani-Baghar falls steeply to the water.

Beyond the end of the backwater a very wet marsh, with reeds and sedge, extends inland for 2 miles farther, as far as the village of Papas Burgas, on the western side of the valley. Above the marsh, the country for many miles

is quite flat, and is inundated regularly every winter up the valleys of the Kara Su, and its tributaries, which are mere petty rivulets in summer, and if dammed, then the overflow would be at once absorbed by the soil.

The railway line between Tchataldja and Baghtcha-ish is often overflowed in winter, although it is 10 feet above the country, and there are numerous bridge-openings through it.

The General Position.

Immediately north of Esskidshi Tchiftlik, a farm close to the remains of a strongly-built tower of the Roman period, rises a low conical hill forming the last feature of a spur of the main ridge, which stretches down in a south-westerly direction from Kara-Aghatch. This hill is proposed to be occupied by a large work as the left flank of the position. It should be supported by a very strong work near Kara-Aghatch, which will protect its rear and flanks, and sweep the adjacent valleys. The valley on the south, leading up from Esskidshi, is narrow at the bottom, with long, gentle, uniform slopes, very slightly rounded. The stream in this valley is small, and in many places disappears altogether. Water, however, may easily be procured by wells. The valley at Kara-Aghatch is very well adapted for a camp for the Reserve.

The next valley, north of Kara-Aghatch, has a flat bottom from 500 to 1,000 yards wide, and in places so marshy as to be almost impassable. The slopes are fairly gentle, except at some spurs near the village of Mohakeui, where a shelly rock crops up. Beyond the village, the upward course of the valley bends round by East to S.S.E., and the western side is steep and broken, while on the east there are long, gentle slopes. The railway, after ascending in sharp curves from the Kara Su valley, near Baghtcha-ish, follows the northern slope of the Moha valley to the summit level on the saddle-back, between that valley and the Hademkeui Dèré from which point it curves round to the south and descends to Hademkeui Station and Kutchuk Tchekmedjé.

This summit level is the best point from which to lay a branch up the Hademkeui Dèré, by Jasieren, to near Delijunus, for the supply of the right. Starting between the 53 and 54 kilomètre posts, the line would follow the western slope. The gradients are fair, the soil easy, and but a few culverts for springs would be needed. As the map shows, it is nearly a straight run the whole way.

Returning to the line of defence: near the village of Baghtcha-ish, a low spur stretches in a southerly direction from the extreme southern bend of the railway, and affords a good, though low, line to occupy, at a distance of 2,500 to 3,000 yards from the opposite hills north of Papas Burgas. This ridge has a slight command over the spur, but not enough to be of serious importance. The enclosed work for this part of the line will be situated on the hill between Baghtcha-ish and the Watch Hut on the railway, a very good position; and the front line along the spur will also receive direct support from the work on the hill below Kara-Aghatch (Black Tree) at 2,700 yards. The front will be flanked from Esskidshi at 2,500 yards, as well as from another portion of the front line immediately north of Baghtcha-ish.

The next very important work will be situated on the hill rising over Tozalak Tchiftlik, a most magnificent position, with an uniformly sloping glacis of 700 yards in its front, and a widely extended view. This point is the last spur of Tozalak Bayère, and perhaps the most important on the whole line. It is 4,000 yards from the front work at Baghtcha-ish, and 3,400 from the hill above it near the railway. Between the two, there are two lower spurs suitable for smaller works, and well secured by being retired from the general line.

The next point in front line for occupation is the spur which runs out between Nakkash Dèré and Kayin Dèré, only 80 or 90 feet above the plain, but sufficiently high to have a command over the very slightly rising ground surrounding the village of Izzedin, from which it is distant 3,000 yards. The whole front of this spur should be occupied by entrenchments, and they will receive support from a work on a somewhat higher hill due south of Baba-nakkash (the Father of Painters) village.

Reverting now to the position of the enemy: his extreme right will rest on the backwater at Menoukshi, 2,800 yards from the proposed work over

Esskidshi Tchiftlik, on the long ridge or tongue separating the Kooug Dèré from the valley of the Kara Su. This very singular feature, which commences at the gorge one mile south of Tchataldja, where the Kooug stream breaks through the Tchataldja mountains, and extends down to the backwater at Menoukshi, with heights varying from 100 to 300 feet, offers a particularly favourable position for the enemy, as the valley in rear of it is completely hidden from the highest ground on the eastern side of the Kara Su. However, the Plaghani Baghar (the conical stony mountain close to the village of Plaja) looks down on and enfilades this valley throughout the whole of its extent, and, if properly held, will neutralize the advantages an enemy might otherwise derive from it. The crest from Menoukshi by Papas Burgas lies tolerably parallel to the opposite position, and from a knoll, marked Soudra Tepe, it falls away to the north-west towards Tchataldja, and lies out of range from the position. The enemy must consequently advance to the Izzedin plateau where there are but very gentle and shallow folds in the ground, nearly all seen from the high ground on the east side, except where this plateau slopes up to a high point on the north-west, but this point again is practically too far off.

Turning again to the position, it will be seen from the map that at the head of the Nakkash Dèré there is a neck or saddle-back forming a well-defined isthmus uniting a large and bold outlier (Urzunlu Bayère) with the main ridge. The southern point of the outlier lies opposite the low spurs already described as being situated between the Kayin Dèré and the Nakkash Dèré, and the northern point ends in a very steep scrub-covered slope facing the village of Kyssyljaly. Along the front of this peninsula there are several excellent positions for defence. Continuing the description from the southward, the first point to occupy is a high spur 2,200 yards west of Baba-nakkash marked by vineyards and orchards. It is 350 feet high, and 2,500 yards from the spur to the south. It has a very fine command to south and west to north-west, but is commanded completely at 1,300 yards by the summit rising to north of it, on which a large work should be placed, at the southern extremity of the summit plateau on the southern side of the peninsula. North of this there is a neck, and then a long ridge follows, the northern end of which falls and curves round to west and then again to south in a succession of knolls, the lowest of which, marked 410, should be occupied by a small work, commanded by another principal one on the higher ridge above. The whole of the intervening front between the north and south extremities of the peninsula is to be intrenched, and the hill facing the gorge at Kyssyljaly should have emplacements to flank the foot of the steep slope already mentioned. The neck already spoken of forms the only road of communication with the peninsula, and is well commanded by a hill marked 660 immediately east of the neck. This should form the position for the Reserve.

Beyond the villages of Kyssyljaly and Urzunlu, the southern slopes and spurs of the main watershed are immediately encountered, and the country becomes much more complicated, and of a mountainous character rather than merely hilly.

Although I have not surveyed this part, in consequence of the prevalence of rain, a sufficiently accurate description can nevertheless be given of it.

The whole country between the watershed separating the Sea of Marmora from the Black Sea and the latter sea is covered with scrub, chiefly dwarf oak, but also comprising juniper, hazel, arbutus, birch, and other shrubs. Near the villages, which are very sparse in this region, there are a few clearances, and the scrub is kept down to 3 to 5 feet by constant cutting for firewood. In the more remote parts it grows so high and thick as to be almost impenetrable, but in no place attains the size of timber. Large quantities of charcoal are made in some parts, of a thickness from that of a finger to an arm.

Brushwood.

This scrub forest will afford a practically inexhaustible supply of brush-wood for the construction of fascines, gabions, hurdles, &c., as well as fuel for the troops. In this regard, however, it will be desirable, on account of difficulties of carriage, to procure fuel from the scrub forests adjoining the railway at the second station beyond Tchataldja.

The topographical character of this district is determined by the back-bone ridge of the Little Balkan, which rises to from 600 to 700 feet above the sea and throws out spurs on either side. On the south side these spurs are more irregular than on the north, where long narrow ridges, also throwing out minor

spurs, stretch out towards Lake Derkos and the Black Sea. East of Derkos the main watershed approaches to within 4 miles of the Black Sea, and remains parallel to it, thence to Buyuk Dèré. The irregularity of the ridges, the narrowness of the intervening valleys, and the close nature of the country, combine to render the defence of this part of the line much more difficult than that already described.

Leaving the country already mapped at the work proposed on the northern end of the Urzunlu Bayère peninsula immediately south of Kyssyljaly, a choice of two lines presents itself for the further extension of the position. The inner line takes the ridge rising immediately above Kyssyljaly, and reaches the watershed in about two miles, having a narrow valley with rather steep slopes immediately in front, and a ridge rising to about the same height beyond at 1,000 to 1,500 yards. The valley can be flanked partly from the position on the Urzunlu Bayère, and partly from a very strong work which should be constructed on a knoll on the watershed slightly in advance of the ridge. Another choice of lines offers itself between the watershed and Lake Derkos, but the rear or easternmost ridge of the two, being that which is followed by the track or road leading nearly due north from the Jaserin windmill to Derkos, and the village of Delijunus, and striking a bay of the lake at that village, seems to be preferable.

The alternative of advanced line has its left on the last spur of a ridge extending down from the main watershed to the village of Urzunlu, about 2,500 yards from the last work on the Urzunlu Bayère. The valley in front of this ridge is at first about 4,000 yards wide, but narrows towards the watershed. The view over it is comparatively open, and as far as the watershed, about 2 miles, the position leaves little to be desired, and is only objectionable on account of the isolation of the left flank, which is very much thrown forward. At the watershed the dense scrub forest commences, and extends northwards to Lake Derkos. A fairly well marked ridge leads from the watershed to the southern forked bay of the lake, 4 miles west of Delijunus. The valley in front of it is rather narrow, but the next ridge in front has more objections. In any case an immense quantity of clearing will be required.

On weighing the relative merits of these two lines, the advanced position appears preferable. Five or six works will be needed to occupy this line of about 6 miles, and as taking the offensive in this close country is quite out of the question, no pains should be spared to make this line as impracticable an obstacle as possible by continuous and formidable earthworks with abattis and entanglements in front. The second line should also be put in a state of defence in case of eventualities, as the country does not lend itself to an active defence, or to the speedy movement of reserves on the front line, the main line of communication with which will be along the watershed, where there are good tracks, and even traces of a paved road.

There remains then the strip of land separating Derkos Lake from the sea. The navy will form the most efficient protection for this part, but a line of works (about two will meet the case) should be thrown up. The lake itself is deep enough for whatever steam launches or other craft armed with guns can be got into it. There are only a few small fishing caiques actually on the lake, and the overflow into the sea is said not to be navigable at any time.

Considering now the force requisite to hold the lines. The position from the head of the Buyuk Tchekmedjé backwater to Lake Derkos comprises 10 miles of excellent quality for defence and offence, and 6 miles of broken country only suitable for the defensive, with close country and a limited view in front, and bad communications very difficult to improve.

Given one week for preparation, 5,000 men per mile may be put down for the good part, and 8,000 per mile for the bad part, making roundly 100,000 men (exclusive of the Kallikratia position, which could not be occupied without more time for preparation, or a number like 15,000 or 20,000, which is more than it might, under such circumstances, be worth).

With 100,000 men and a week's preparation the position would be tenable against a force of 150,000, which appears the largest number likely to be marched on Constantinople.

In proportion as the construction of really defensible works armed with powerful artillery (64-prs. and 40-prs.) and the improvement of the intermediate

defences progresses, so can this number be diminished. After two months' work 3,000 men per mile on the good part, and 5,000 men on the difficult part may be allowed, making 60,000 men for the defence of the line, aided by substantial field works; but to this should be added from 8,000 to 10,000 men for the occupation of the entrenched position at Kallikratia, which, as already explained, will not only secure the port of Buyuk-Tchekmedjé, but will add very greatly to the strength of the general position. 2,000 men will be needed between Lake Derkos and the sea, making thus 70,000 men in all.

With permanent works on eight or ten of the most commanding points, *i.e.*, works secure against a *coup-de-main*, this number might be still further reduced, but this is not to be anticipated at the outbreak of a compaign.

These numbers are minima, and will bear neither detachments nor diminution without hazard. Should it be found impossible to furnish 70,000 men from England, there is always a ready and available means of raising men in Turkey, where service under the English colours would, I am quite certain, from what I have seen of the army and the inhabitants, be most popular. It is the custom of the Turks to send up to the front, not reserves to replace casualties, but whole new battalions. There exists, consequently, in the army an immense number of cadres thinned down to mere skeletons by the losses of the campaign. By taking over 30 of such cadres of infantry battalions, and a small proportion of artillery, numbering about 3,000 to 4,000 men, we could have our pick of recruits, or of mustahfiz who have already served, to fill them, and raise a force which, in a month, would be perfectly able to take their place in the entrenchments, and would prove thoroughly reliable.

It is desirable to call special attention to the question of armament for the works. Along 10 miles of the line the positions are so commanding that the superiority of powerful artillery over field guns has the fullest scope. With a sufficient number of really superior long-range heavy guns it will be possible to crush the enemy's artillery the moment it becomes visible, and to prevent the very serious annoyance and depression produced by a constant fall of shells within the defences. The largest possible available number of heavy guns should be mounted on the works along these 10 miles, and at Kallikratia. 200 guns, 40- and 64-prs., is not an inordinate demand; they will give a security and a comfort to the troops which cannot be over-rated.

In the close country, between the watershed and Lake Derkos, heavy Artillery loses much of its superiority. One or two large guns in each principal work will be sufficient. Obstacles and Infantry must form the mainstay of the defence here; the ridges being too near for the satisfactory employment of Artillery, except for flanking purposes. Rockets will be useful at this part of the line.

There will be no difficulty in hauling even 64-prs. from the railway to the works with teams of the powerful buffalo of the country.

The local transport consists of arabas or very rough four-wheeled wagons drawn by buffaloes or oxen in rude yokes without any harness. The horses are small (13 hands), but hardy, strong, sure-footed and enduring. They are used for pack transport, and will carry 250 lbs. easily, and 400 lbs. at a press. There are a few camels, but not a sufficient number to take into account for transport purposes. Large numbers might, however, be readily procured from Asia Minor. Transport.

The principal road traversing the line is the Adrianople road, crossing at Bujuk Tchekmedjé (the great bridge). This is metalled or paved, and is in excellent order as far as Kallikratia, where it becomes a mere track on to Silivri. It is accompanied by a line of nine telegraph wires. Roads.

The next good road is that which crosses the Kara-Su valley at Tchataldja, on a stone-paved causeway nine feet wide, very rough and broken in parts. It becomes worse on either side of the valley, and can only be regarded as being useful for pack animals when the valley is under water, and for crossing the streams. The usual road is a track alongside it. It leads to Constantinople by the head of Kutchuk Tchekmedjé backwater. All the other roads are mere tracks, more or less bad. In the grass country a new track can readily be taken when the old one is too deep and impassable. There are generally bridges, culverts, or pieces of chaussée across the streams and valleys, generally passable for light traffic. Arabas generally prefer a ford.

J. C. ARDAGH,
Captain R.E.

Delijunus, near Derkos.
15th November 1876.

MEMORANDUM BY THE INSPECTOR-GENERAL OF FORTIFICATIONS ON LIEUT.-COLONEL HOLME'S REPORT, No. 1, OF 15TH NOVEMBER 1876.

LIEUT.-COLONEL HOME, in this report—which is based upon a hasty examination of the proposed line of works to cover Constantinople, extending from the Black Sea to the Sea of Marmora—states his opinion that it cannot be held with a smaller force than 65,000 men, supported by 120 guns; and he proposes that, if it be decided to occupy this peninsula, any force sent from England should be supplemented by Mahomedan troops from India.

These would form a valuable addition to the forces in Turkey; but it may be for consideration whether, if the troops cannot be spared from India, a contingent of the Turkish Army might not be taken into British pay and officered by British officers.

Such a force would be far more economical, more rapidly organized, and, as the Turkish Government are greatly in want of funds, might relieve them to a certain extent. In fact, if there be a question of England going to war with Russia and co-operating with the Turks, it might be well worthy of consideration whether a very large force of Turks might not with advantage be taken into British pay, even to the extent of 100,000 men.

The Turkish Army so paid and officered would be quite equal to a like number of Russians; and by their payment unity of command would be ensured for a very large force, which is always a most important point in carrying on war.

In a Memorandum of the 10th November, by Lieut.-Colonel Home, he estimates the whole army at the disposal of the Turkish Government at 140,000 men, which he thinks should be divided as follows:—

80,000	to hold Schumla, Pravadi, and Varna, and cover the passes of the Balkan;
40,000	at or near Tatar-Bazardjik, to hold the Servians in check;
15,000	in Constantinople.
135,000	Total.

Lieut.-Colonel Home must, I think, have under-estimated the force at the disposal of the Turks, as the forces lately in Bosnia, Servia, and Herzegovina, and opposed to the Montenegrins alone amounted to at least 140,000 men, exclusive of the various garrisons (numerous, though small) existing in different parts of the Empire. Lieut.-Colonel Home is quite right in saying that the small garrisons should be drawn in, as they only invite disaster; but I am inclined to believe that the force at the disposal of the Turks is more considerable than estimated, and that therefore 100,000 men could, if the Turkish Government consented, be taken into British pay, while still leaving a large army in Turkish pay, and the more so as the last reserve (about 90,000 men) are just about being called out, whom the Turkish Government will find great difficulty in clothing and equipping.

The addition of a Mussulman force from India would, however, be of very great value.

With respect to Lieut.-Colonel Home's Memorandum on the force and proceedings of the Russians, I append a Memorandum* which I had drawn up previously to receiving Colonel Home's report, with a view to submitting it to your Royal Highness, in which I have shown what the Russians may expect to do if they commence war during the winter. It (as well as a previous Memorandum of the 30th October) points to the importance of the fortified positions—Schumla, Pravadi, and Varna—at the northern foot of the Balkans,

* See page 17.

as now pointed out by Colonel Home; but I should differ from him somewhat as to the actual disposal of the Turkish forces, only placing in the fortresses enough to hold them firmly, and with the remainder defending the summits of the Balkan passes, ready with any army that may be got to support them to move down through the passes to their relief.

All these speculations, however, depend entirely on the force at the disposal of the Turks, concerning which it is very desirable that a more precise report should be given after Colonel Home has been a little longer in the country, and has been able, either by himself or his officers, to verify the strength of the Turkish Army and garrisons.

As to the Russians, I feel confident that they cannot advance beyond, even if they can reach, the Balkan, before the spring.

It was with the view of determining whether they could advance, as I had heard stated, at the rate of ten miles a day from the Russian frontier to Constantinople that I entered upon the study of this question, which is treated of in my paper herewith of this day's date (*see* p. 17).

There may be, therefore, a time for consideration before Her Majesty's Government may require to act. In the meantime, I think it well that an additional number of guns should be prepared, in accordance with Colonel Home's recommendations; and it would be of benefit to enter upon the consideration of the possibility of supplying a field force from India. And I would further point out, for the consideration of Her Majesty's Government, that the estimate of 65,000 men stated by Colonel Home to be necessary for the defence of the position between the two seas, does not include an additional 10,000 men which, so far as I can judge from the imperfect information at my disposal, will be necessary to hold the Gallipoli peninsula.

I also think it most desirable that information should be obtained as to the state of the defences of Varna, Pravadi, and Schumla, and the means provided by the Turks for the destruction of the Varna-Rustchuk railway, which is one of the most important military measures the Turks can possibly take at the present moment, when the Russians are mobilized in great force on their frontier. It is of no use whatever to them as a strategic line between Rustchuk and Schumla, and I would therefore advise and urge them to close their traffic and commence moving the rails from the Rustchuck end at once, their object being to add to the difficulties of the Russians in provisioning their army, and thus enforce delay.

J. L. A. SIMMONS.

2*nd December* 1876.

FURTHER MEMORANDUM BY THE INSPECTOR-GENERAL OF FORTIFICATIONS, IN REFERENCE TO LIEUTENANT-COLONEL HOME'S REPORT, No. 1, OF 15TH NOVEMBER 1876.

THE following points with reference to the possibility of a British Force being sent to Turkey, suggest themselves for consideration.

1. In another paper it has been shown that, the Turks having command of the sea, the Russians, whether opposed by Austria and Roumania or not, cannot, whatever force they have at their disposal, whether large or small, attempt to cross the Balkans until they have collected at the northern outlets of the passes, provisions sufficient for their supply during their further advance; that is, if the Turks only take ordinary precautions and show the most moderate opposition.

2. The process of collecting these depôts of provisions and munitions of war cannot, unless by great remissness of the Turks, be commenced before March. This process will be slow unless aided by the Roumanian and Varna-Rustchuk

Railways. If this latter line be effectually destroyed, as it ought to be, and too much importance cannot be attached to this point, so much so that the arrangements for its destruction should at this moment be decided upon, and the removal of the rails even commenced, the process of establishing depôts will be considerably lengthened; so that it may be safely assumed that if the Turks can show little more than a shadow of opposition in the mountains, no attempt can be made to commence their passage before the month of April.

3. To make the passage of the Balkans secure, it will be necessary for the Russians to leave such a force to their north as shall hold Schumla, Pravadi, and Varna in check.

If the latter place, especially, be securely held by the Turks, this force will necessarily be considerable. Lieut.-Colonel Home's calculation of from 80,000 to 100,000 men is not excessive, under the supposition that the Turks have command of the sea.

4. The length of time necessary to cross the Balkans and march on Constantinople depends on whether, or not, such an opposition will be met with entail the necessity of the army marching in large masses.

The intervening country might be overrun by cavalry, who could feed themselves while advancing over it at the rate of ten miles a-day or even faster, but the case is quite different if the invasion be made by heavy masses of infantry, who could not spread themselves over the country in quest of food; or even a cavalry inroad might be seriously embarrassed if its progress were checked and the expedition delayed for some time, in a thinly inhabited country, possessed of few resources. In the spring of the year horses and cattle might find abundant grass for provender (not so, however, in the summer), but the men would experience great difficulty in subsisting.

For these reasons it would probably be necessary, after passing the mountains, to halt and again form intermediate depôts, before advancing further towards Constantinople, especially if opposition were expected before reaching that city.

Under these circumstances it appears that it will be safe to predict that at the earliest the Russians cannot be before Constantinople much before June next.

5. The object of this statement is not to induce delay on the part of Her Majesty's Government in arriving at a decision as to the course they will take. On the contrary, it seems most desirable that if Her Majesty's Government contemplate sending an expedition to the East, no time should be lost in organizing it, and certainly, considering the condition of our army, with its heterogeneous reserves and auxiliaries, four to six months is not too much to get a very moderate force, say 50,000 men, completely equipped for the field, and to transfer them and their equipments to the scene of action; every day gained would be of immense advantage.

6. It is not for a soldier to express any opinion whatever as to the political action to be pursued, in deciding upon the necessity or otherwise of military operations, but there is one observation which it is legitimate for a soldier to make, as having a most important bearing on any military operations which may be undertaken, and on the probability of their success.

A military demonstration to hold Constantinople under the belief that England may nevertheless possibly not be drawn into a war, will be a fatal mistake and a delusion. It would permit of our only certain ally, the Turk, being overpowered and beaten by the Russians, after which their whole power being available against the small British Army, aided only by the wreck of the Turkish Army, the Russians would certainly attack the British Force with their whole energies. It is possible and more than probable that such an attack would be attended by failure, certainly during the first year 1877; but if the administration of the country were in Russian hands throughout that year and the following one, which the British Army could not prevent, the attack, if renewed in the following campaign (in 1878), would be very serious, and it would not be probable that any British force, considering its distance from England, could be increased sufficiently to enable it to take the field successfully and drive the Russians back across the Balkans. In fact, the campaign in the second year would transform itself into a siege, with nearly a million of inhabitants within the besieged position.

7. For these reasons, if England contemplate the possibility of a military occupation of Constantinople, it would be far better for her to decide on war immediately that the Russians cross the Turkish frontier, or that they make any overt declaration of war, and to lend her utmost support and assistance to the Turks, who are as good soldiers as the Russians, and only require officers to command, and money to equip and feed them, to make them quite equal to a Russian Army of equal strength. This assistance should not be deferred, but, on the contrary, the measures now being undertaken by the Turks for their defence, should be under British advice. If once the Turks are routed, England would lose the most efficient ally she could have in the event of her being involved in war in Turkey, and therefore it would be simple madness to allow the Turks to be crushed, while Great Britain is still undetermined or making what she may be pleased to call a demonstration.

If the Turkish Army could be kept intact and the Varna railroad thoroughly destroyed, and Varna itself held, a very good stand might, with the aid of the British Army, be made on the Balkans, and in fact it might be possible, under certain circumstances, to prevent the Russians from crossing them. This, however, would require that Great Britain should at once make up her mind, and would not interfere with the necessity for the immediate construction of the lines in front of Constantinople.

8. Before entering on a war, however, at this great distance from England, several considerations of the highest importance present themselves:

(*a.*) In the war of 1854 the communication by sea was secured by the co-operation of the two leading maritime powers of the world. British and French ships traversed the seas with stores, munitions of war, and even men without a gun to protect them. Since then the "Alabama" has shown what a single fast armed cruiser can do. Have the Admiralty considered the means to be adopted for securing the free communication with Constantinople by unarmed ships, of which a whole fleet will be required to feed and provide the Army?

(*b.*) Has the question been seriously considered and studied what effective force Great Britain can bring into and sustain in the field? Whatever that force may be, it is indisputable that no half-and-half measures should be taken by way of demonstration or otherwise, but that she should put forth her whole strength in the struggle, from the very first commencement, as her antagonist, Russia, is doing. Any half-and-half measures would certainly lead to disaster, or at any rate, demand far greater sacrifices in the end.

(*c.*) What force will be opposed to the British force?

Lieutenant-Colonel Home, in his memorandum, calculates the total Russian force *at present* available for the invasion of European Turkey at 250,000 men. It is probable, when the necessity of observing Austria is considered, and the numerous calls that will be made upon her army elsewhere, that this may be taken as the limit available at the *beginning of the war*.

It is also probable that of these, 100,000 to 150,000 men will remain north of the Balkans, leaving not much more, after allowing for casualties, than 100,000 or 120,000 men for ulterior operations to the south of that range, as stated by Lieutenant-Colonel Home.

This calculation, however, only applies to the *first campaign*, when the saying of the Duke of Wellington, quoted by Lieutenant-Colonel Home, "that in Spain a large army would starve and a small one be beaten," would apply; but if the administration of the country were in Russian hands for one year, it by no means follows that it would apply in the second year; on the contrary, it may be expected that the country, in which in 1877 it will be difficult to feed 100,000 men, will be equal to the support of 200,000 the following year, which would materially alter the conditions of the struggle.

(*d.*) The part to be played by the Russo-Servian army will require consideration. Russian officers and volunteers at present reach Servia and Montenegro through Roumania and Austria. The Servian

army alone may probably be held in check by a comparatively moderate number of Turks, but if reinforced by Russians, and supplied with arms, &c., through Austria, after the re-opening of the struggle, as heretofore, it would soon acquire such strength as to be able to move out of their own country against the Turks in support of a Russian invasion across the lower Danube.

Can Austria be prevailed on to stop the flow of Russian volunteers and supplies into Montenegro and Servia? If so, she ought to be required to do so from the present moment, otherwise the mischief will be done, and it may be *too late* to undo it after a few weeks.

The permission for the soldiers of Russia to invade the Turkish provinces in revolt through Austrian territory appears totally inconsistent with the avowed neutrality of that power. The route through Roumania will be open to the Russians, if the Roumanians throw in their lot and make common cause with them; but the supply of both armies through and from Roumania will add much to the complication of the operations, and we know that Servia is so exhausted, the army moving from it as a base must drive all its resources from beyond its frontier.

(*e.*) Lastly. It should be considered by what means Great Britain could in the most efficient and economical way add to the strength of the British Army, which, unfortunately, from the nature of its constitution, must always be small.

The struggle will be one for life and death. A British force of 50,000 men alone will be quite inadequate to ensure success; that is, if by success it is understood that Great Britain is to do more than sustain a siege in front of Constantinople. By carrying on such a war she would descend from her position as a first-class power, and lose her prestige in the East. In fact, Lieut.-Colonel Home reports that 65,000 men will be necessary to hold these lines, and it is probable 8,000 to 10,000 more will be required to hold the Gallipoli lines. The occupation of these lines alone therefore will require a larger force than can be sent from Great Britain at first, but even if such a force could be sent, it would be altogether derogatory to British interests to avow her incapacity to keep the field against Russia, and to submit to be penned up within entrenchments.

There never was a time when it was more necessary "to sit down and "consult whether, with" the force at the disposal of England, "she is able to "meet the power that is against" her. And if she decide in the affirmative, then that the *modus operandi* should also be most carefully considered.

J. L. A. SIMMONS.

4th December 1876.

MEMORANDUM BY SIR LINTORN SIMMONS ON THE PROBABILITIES OF A RUSSIAN INVASION OF TURKEY, AND THE EXTENT TO WHICH IT MAY BE CARRIED IN A WINTER CAMPAIGN.

The probable course to be pursued by Russia, in the event of a war with Turkey, has been ably treated by Captain Clarke, R.A., and Captain Baring, R.A., in papers issued by the Intelligence Department, but there are some points in connection therewith which appear to require elucidation.

Captain Clarke describes the processes by which the Russian Army will be mobilized, and the means by which they could be moved to the frontier, and calculates the time required for these purposes.

After the late orders which have been given for the mobilization, it is said, of six army-corps, it may be assumed that they are, or will be, collected in a condition to assume the offensive in Bessarabia, between the Pruth and Dniester, in close proximity to the frontier, as they were in 1828, before any step is taken which amounts to a declaration of war.

Since the change in the frontier of Russia, consequent on the Treaty of Paris, the dictum of Count von Moltke, quoted by Captain Clarke, that "in no case would it be right to cross the Pruth sooner than the Danube," no longer holds good. In 1828, the Pruth and Danube were both frontier rivers, dividing Russia from Turkey, and therefore, while still preparing for war, corps could be massed on the left, or Russian side of each, ready to cross simultaneously; whereas now the frontier leaves the Pruth about 75 miles from its confluence with the Danube, and, after trending to the south near Bolgrad, turns to the east, running out to the Black Sea about 30 miles from the northernmost mouth of the Danube; but it approaches that river at no point at which a crossing could be effected, nearer than 35 miles.

In 1828, the Russians crossed from Satonovo to Isaktscha, but, previous to their crossing, were obliged to prepare a causeway 7,000 paces in length, in Russian territory, across the "broad marshes" on the left bank of the Danube, and they brought by the branches of the Danube, then within Russian territory, 63 large wooden praams, 12 feet wide and 36 feet long, besides requiring 12 pontoons to bridge the river, which is 900 paces wide at this point.

In 1854, when they crossed at Galatz, they had been for many months in peaceful occupation of Moldavia and Wallachia, and had collected timber sufficient for a floating bridge.

As these preparations cannot now be made until after the frontier has been crossed, and several marches made, they will be compelled to bring pontoons, or use such local means as may be available (unless they cross on the ice) to effect a passage of the Danube. It is no doubt with this view that a large pontoon train has been formed at Kiev.

Considering the small force which it is believed the Turks have to oppose an advance in the Dobrudscha, it seems probable that a Russian force may effect a passage of the lower Danube, and by moving up the left bank, in co-operation with another force marching through Wallachia, might secure a junction with that force at Totrokan and Rustchuk.

It is to be observed that the Russian Army advanced through the Dobrudscha in 1828, and again in 1854; and, since the Treaty of Paris, the population of this district has enormously increased by the immigration of Tartars, and it is now possessed of large resources in cattle, and numerous villages with wells, which did not exist when the British Army was at Varna. To do this, it would be necessary to observe or blockade Silistria, the garrison of which not being strong, or organized as a moveable column, would not require a very large force to contain it. It would also be necessary that this

force should be strong enough to protect the corps moving on Rustchuk from a flank attack by any Turkish corps advancing from the line of the Balkan, for which purpose a considerable force of cavalry would be necessary, who, by taking advanced positions on the line Hadschi-Ogln-Basardschyk, Rasgrad, or even still more in advance, according as they were opposed or not, would effectually secure the movement from a flank attack.

Totrokan is not fortified against attack from the south, and, according to the reports quoted in the papers under consideration, the defences of Rustchuk on the south side are not capable of a prolonged defence, even if it were well garrisoned, which probably it is not. By these operations the defences of the Danube would be turned, and a secure basis for further operations in Bulgaria be obtained.

The successful performance of this operation would greatly depend on the attitude of the Roumanian Principalities and of Austria. The break of gauge between the Russian and Roumanian railways is an important element in this consideration. Captain Clarke, quoting from a report by Colonel Conolly (the Military Attaché at Paris), states that Russian carriages and wagons are fitted with moveable axles, so that they may be run on foreign lines; this, however, must be a mistake, as, according to the experience of engineers in this country, when two gauges existed, it was found impossible to adopt any contrivance by which carriages of one gauge might be used on lines of another gauge, in consequence of the risk involved thereby in conducting the traffic; and it is quite unknown among English engineers that such a contrivance has been adopted in Russia.

If, therefore, the Roumanian Government oppose the movement of the Russian army through their provinces, although their army could not alone offer an effectual and sustained resistance, the operations of the Russians might be much embarrassed by the simple process of withdrawing all their rolling stock, and by the destruction of some of the bridges over the numerous rivers crossed by the railway between the Pruth and Bucharest. The destruction of one or two spans of the bridge across the Sereth, between Galatz and Ibraila, which has eight or ten openings of 150 feet span, supported on lofty cast-iron cylinders filled with concrete, would effectually prevent the use of this railway, if the rolling stock were withdrawn to the west of the river. The Russians would also be compelled to occupy Wallachia, in order to secure their line of communication, by which a considerable force would be absorbed, probably not less than 50,000 men.

On examining the map it will be found that the shortest route from the Russian frontier near Bolgrad to Bucharest passes through Galatz, its length being 162 miles.

Von Moltke relates that a detachment of the 7th Russian Corps crossed the Pruth at Skulany on the 7th May, and that on the 16th (the ninth day) the gros of the corps entered Bucharest. As the distance by the post road is 246 miles, it is evident there must be some mistake in this statement. The Russians are famous marchers, and were unopposed in this march, but the rate of 27 miles a day would point to a rapid advance of light cavalry, the arrival of which in Bucharest must have been wrongly reported as that of the gros of the corps.

The distance from Bucharest to Georgevo, opposite Rustchuk is 41 miles, so that the shortest distance from the Pruth through the Principalities to Rustchuk is upwards of 200 miles.

The distance from Bolgrad to Ismail is 32 miles, thence by Toultcha through the Dobrudscha to Medschidie, on the Kustendsche railway, 80 miles, and to Rustchuk, *viâ* Silistria and Totrokan, is about 180 miles, making a total distance from the frontier to Rustchuk by this route of about 212 miles.

The additional length of route, about 12 miles, would be well compensated by securing all the passages of the Danube east of Rustchuk without serious opposition; also Silistria would be blocked, which, if an advance is to be made upon the Balkan, must be done whether the passage of the Danube be effected at Rustchuk or at any other point below it. The resources of the Dobrudscha, which are considerable in cattle, including buffaloes for draft purposes, would probably be secured before they could be withdrawn.

An advance through the Principalities upon Bucharest has undoubtedly the great advantage, if unopposed by Roumania, of securing the use of the railway for bringing up supplies, &c.; also of placing the resources of the Principalities, which (as Captain Baring shows) are very great, at the disposal of the invaders; but this advance has this serious drawback from a military point of view, that Galatz is only about 80 miles, and Ploeshti, on the Bucharest-Galatz Railway, only 40 miles, distant from Kronstadt, a large military station just within the Austrian frontier, with good roads for the movement of troops leading from the frontier, whereas Georgevo is 78 miles from Ploeshti and 171 from Galatz.

It is evident, therefore, that a Russian invasion through Roumania, *viâ* Bucharest to Rustchuk, must depend upon the attitude of Austria; in fact, could not be undertaken unless with a perfect certainty that Austria had no force collected in Transylvania and the Bukovine, and would not intervene.

By crossing at or below Galatz, and occupying the left or elevated bank of the Danube at the very few places at which passages are practicable, the right flank of a Russian army invading Turkey through the Dobrudscha would be secured against attack from Austria at all points above the head of the river near Galatz, leaving only the comparatively short communication of little more than 40 miles from Galatz to the frontier, near Bolgrad, to be protected. The protection of this communication appears to be the object in view in collecting a force at Chocim and near Kaminiec-Podolski, which the Russians are reported to be now doing. This force is evidently for the purpose of observing the Austrians in Transylvania and the Bukovine.

Such being the case, it is probable that the Russian advance will be direct upon the lower Danube, which will be crossed at, or below, Galatz, with an occupation of Moldavia to the northward, followed by an invasion through the Dobrudscha, and according to circumstances, by a column advancing through Wallachia to Rustchuk.

Having established themselves on the right bank of the Danube, they will probably send swarms of cavalry to feel for the Turkish army towards the Balkan, while depôts of provisions are collected preparatory to a further advance.

The rapidity of this advance will depend in great measure on the opposition with which it may be met. If there be a Turkish force of any magnitude to oppose the march, it will have to be conducted in masses sufficient to overcome opposition; if not, the march will be merely a military promenade covered by cavalry, the duration of which will depend solely on the natural difficulties of the country and the facilities for provisioning the troops on the line of march, which will be much less difficult than if the troops are moved in masses.

From what is known of the Turkish army and its distribution, it would appear to be almost certain that no effectual resistance will be made north of the Balkan. Schumla and Varna may be occupied, and probably Silistria and Rustchuk, but if the Turks are left to themselves, the garrisons in the two latter places will be blockaded, if not captured; Schumla will only require a very limited force to observe it, while Varna, which being a port may be reinforced by sea, will require a somewhat larger force.

It may be confidently expected that the occupation of the whole country north of the Balkans included between Rustchuk and the sea will not absorb 100,000 men in addition to any force which may be necessary to observe Roumania and the Austrains north of the Danube, between Galatz and the frontier.

As the use of the sea for provisioning their army will probably be denied to the Russians, it will be necessary for them, before crossing the Balkans, to establish fresh depôts of provisions north of and near the foot of the Balkans, in which position the mountain range would be in their favour for defence, against an attack by the Turks through its passes. Reconnaissances will also be pushed up the passes, if possible, their summits seized, and measures taken to defend their outlets to the north.

The position of these depôts, whether established from Rustchuk as an intermediate base, which without doubt will be the most advantageous that could be adopted, if Austria is absolutely certain to be a neutral spectator of the invasion, or from Moldavia through the Dobrudscha, will be at least 70 to 80 miles from the Danube.* Pravadi, which if seized and fortified by

* Osmanbazar and Turnow are about 70 miles from Rustchuk.

entrenchments, would afford a very secure position for a depôt, is about 90 miles from Medschidie (on the Kustendje and Tchernavoda railway), which again is about 70 miles from Toulcha.

The depôts would require to be of considerable magnitude, because it is not to be imagined that the further advance through the passes would be unopposed. In 1829, the Russian army started from the foot of these passes with 10 days' provisions carried by the men, but in that case they kept to the passes near the sea, and were certain of finding supplies at the nearest port, Missivri, south of the Balkan, which had been for some time in their occupation, having been seized by a naval expedition; whereas if their march were opposed, and not as in 1829 by a beaten, ill-organized army, they must, unless they command the sea, make sure of provisions for a further advance. On arriving at the northern side of the Balkan they would find themselves in a country already much exhausted, the administration of which is much disorganized, thinly peopled, with bad roads, and therefore one on the resources of which they could not depend for provisioning a large army, although it might quite suffice for the support of detachments of cavalry moving rapidly through it.

Taking this and the nature of the roads into consideration, it would appear very hazardous to commence the passage of the Balkan before at least a month's supply of provisions had been collected, and also a very large amount of material near the foot of the mountains on their northern side.

In considering this movement, it appears quite possible that the Russian cavalry may, immediately after crossing the Danube, swarm over the country, and even push reconnaissances up into the passes, but the nature of the country and its production is such that they could not collect provisions for the large army that must follow them, and which must, therefore, for the most part be brought up from the rear. As adding to the difficulties of the Russians, the Turks should be careful to remove *all* their rolling stock on the Rustchuk-Varna Railway into Varna, or run it into the sea if they cannot hold Varna, and render the railroad useless, as it would be of incalculable value to the Russians in bringing up provisions from Rustchuk, and in collecting the resources from the comparatively rich district towards Turnow. There being no bridge across the Danube, the transfer of the rolling stock from the Roumanian, which is on the same gauge as the Varna, line, would cause serious delay. There is also a very deep cutting in clay near Rustchuk, of considerable length, the sides of which are vertical, which, if blown in, would, according to an opinion expressed by the English engineer who constructed the line, cause serious embarrassment, and a viaduct of 7 or 8 openings, with 30-feet span, and about 60 feet high, near Sheytanjik Station, which, if destroyed, would also cause great delay. If proper arrangements, moreover, were made, the rails could speedily be taken up and removed to Varna, and the sleepers burnt; a good working party, with the aid of the rolling stock on the railway, would effect this at the rate of at least a mile a day.

From enquiries made from civil engineers who constructed the existing railways in Bulgaria, it appears that the roads, with very rare exceptions, are in the same state as they were at the time of the English and French occupation in 1854, that is, that they are mere tracks across country, which are perfectly practicable in dry weather, but almost impassable for heavy traffic in winter.

It will, therefore, be impossible for the Russians to drag the heavy material of a large army, and to collect large depôts, so far in advance as the northern base of the Balkans, for some months.

They may occupy the district with a force sufficient to hold it, but even this operation would be attended with enormous expense, and probably with great loss both of men and beasts of burden; but they would certainly have to wait until the country had dried up in the spring (probably the month of March at the earliest) before they could commence forming the large depôts which it has been shown above it will be necessary to prepare before commencing the passage of the Balkans.

By the occupation of Bulgaria in the winter they will, however, secure this great advantage, that they will get the administration of the country into their hands, and be in a position to utilize its resources in the spring; they will also

be nearer the Bulgarian population south of the Balkans, and therefore in a better position to work upon them, and even through their emissaries to get preparations covertly made to assist them in their further advance; they will also have shortened the distance between them and Constantinople to between 200 and 250 miles, and thus be in a very favourable position for a rapid advance upon Constantinople, if they should succeed in routing the Turkish army opposed to them, for which purpose they would no doubt assemble an overwhelming force before commencing the passage of the Balkans.

If this force should succeed in routing the Turkish army, it is quite possible, and even very probable, that no very serious opposition would be afterwards encountered before reaching Constantinople or the works which as yet do not exist, but may hereafter be thrown up to cover it. It is also very questionable whether, if the Turkish army were thoroughly routed near the Balkans, they would be able to secure their retreat through so long a march as that to Constantinople; and therefore unless the defensible position in its front, near Buyuk-Tschekmedsche, were held by a reserve army, it is quite possible that on reaching it the Russians might find it unoccupied, or so feebly occupied that it could not offer any substantial resistance.

J. L. A. SIMMONS.

2nd December 1876.

No. 2.

CONSTANTINOPLE,
18th November 1876.

Sir

I HAVE had now some opportunity of determining approximately the amount of work that must be done prior to an occupation of the lines to the eastward of this city, and also of determining generally the available resources of the place. Although my views must necessarily be of a very general character, I am desirous that you should be in possession of them; but I must beg that you will be good enough to consider them as approximate, and I have little doubt that subsequent experience may induce me to modify them in many important points.

The peculiar position in which I am placed, and the very peculiar people with whom I am in contact, render me rather chary of committing myself to strong opinions of any kind. The information I have obtained is, to a great extent, hearsay. I have checked it as much as possible by weighing the opinions and ideas of one person against another; but I have had to observe so much caution in making enquiries that I feel a safe conclusion can only be arrived at by leaving a large margin to meet all contingencies. I estimate that the following works will be required:—

1. Twelve large strong redoubts, provided with platforms for about 120 guns, and with strong wire entanglements in front. These works to be distinct from the emplacements for field artillery and shelter trenches, which must be constructed by the Divisional Generals as their troops take up their positions within the lines.
2. A good landing-stage for stores, another for men and horses, probably near the powder manufactory.
3. A good landing-stage for men and horses in the Buyuk-Checkmagee Harbour.
4. Storehouses at the powder manufactory for the Army Reserve stores.
5. Divisional Depôts at Jaserin and a short distance westward of the Hademkeui station, on the Adrianople line of railway, with storehouses.
6. About 5¼ miles of railway from Hademkeui to Jaserin, with about 6 miles of rough tramway, to be formed at three points, to be afterwards converted into railway if requisite.
7. About 10 miles of road.
8. If the troops arrive before the end of April, some kind of accommodation for them, either by clearing out the villages which are scattered in the rayon of operations, by building huts, or both, to be provided.
9. The formation of hospitals.
10. The water-supply.
11. The construction of about 60 miles of telegraph, with 30 offices.
12. The establishment of a proper head-quarters.

To execute the above I conceive that about six weeks are available, and, so far as I can find out, the following resources:—

Rolling stock on the Adrianople line—

72 engines.
180 passenger carriages.
1,128 goods and cattle-trucks, of sorts.

Sleepers and rails in plenty, these being in the hands of the Turkish Government. About 60 miles of railway unlaid.

Railway plant sufficient for laying the rails, and about 500 wheelbarrows.

Timber in deals, and spars, an ample supply; rather a deficiency of baulk timber if piles are required, which I am unable yet to say. A complete and liberal supply of sawing machinery, general joiners, and steam-engines are in possession of the Turkish Government.

Telegraph material. The Turkish Government has in stock—

2 millemetre	..	..	3,000 kilo.
4 „	..	..	15,000 „
5 „	..	..	150,000 „

In comparing this with English wire, I believe that a 3-millemetre corresponds very nearly with what we term No. 8, B.W.G.

There are also 18,000 insulators and 4,000 stays. Poles, I am given to understand, are plentiful.

Labour.—6,000 labourers may be collected in a fortnight. It would be difficult to collect 10,000 labourers in less than six weeks. 600 common carpenters could be got together in a week.

A sufficient quantity of tools can be procured at short notice here to employ 10,000 men.

1,000 horses and mules or donkeys, and about 200 pairs of oxen, with from 200 to 300 carts and about 100 Arabas could be obtained.

There are three or four people who would undertake the work in sections, on contracts.

Having now detailed generally the work which I conceive should be done prior to the arrival of the troops, and the local resources, I venture to submit some remarks on the general question.

How far can we safely trust to the Turkish Government?

I assume that they would help only too gladly, but would not that help cripple their own resources? If we let the work to contractors, shall we not have them bidding one against another for labour? And can we trust to getting good work?

On the other hand, if we attempt to deal with the labourers direct, we shall find ourselves mixed up with all races, all creeds, and all languages, and we shall require an amount of superintendence which we cannot hope to obtain.

The question is a difficult one; but I lean to the contractor system, naming a day on which the particular work is to be completed, and contracting that a percentage (say 10 per cent.) be paid additional for each day the work is completed before the day named, and the same percentage deducted for each day the work is delayed.

The most difficult subjects, undoubtedly, are the roads and the accommodation for troops, if they are sent out before they can be safely encamped.

Each of the twelve subjects into which I have divided this subject will form the subject of detailed reports. But, viewing the state of affairs, I think it desirable, if action has to be taken at once, that the subject should be ready, so that work may be begun at once, if requisite, without preliminary plans.

Meantime I have the honour to draw attention to what will undoubtedly be one of the main difficulties—viz., providing roofs for huts and stores. The ordinary roofing of the country is formed of heavy tiles, quite unsuitable for our wants. I know of no substitute but felt; felt, however, requires roof-boarding below it. There is no felt procurable here, and for a supply of this article we must depend on England.

Light corrugated iron might, perhaps, be used to form stores, both sides and roof somewhat similar to the Aldershot kitchens. I think that stores of this kind might be very quickly put up, and that perhaps a contract might be obtained in England for making them, and putting them up here at, at all events, the store depôt near the powder manufactory.

There is a firm in London that contracts to construct such buildings in Australia, and it might be judicious to find out whether this firm would undertake the work.

I have taken steps which, I believe, will obtain the requisite railway survey of the line from Hademkeui to Jaserin, so that work may be at once begun on it, if ordered. A certain number of platelayers will undoubtedly be available when the Turkish railways north of the Balkan are given up, and a certain number may be obtained from the Asiatic railways.

I submit that the following be prepared, lithographed, and sent out to me as soon as possible :—

1. A specification of a line of railway similar to the existing Turkish lines, with all culverts, &c., made in timber. Captain Tyler could probably supply this.
2. Copies of a printed memorandum sent to me from Chatham on the construction of the Gold Coast Railway. This memorandum contained much useful information.
3. A working drawing of a store hut, showing on a large scale all portions of the work. Usually these huts are made of too strong scantling.
4. Similar drawings of a hospital hut.
5. Similar drawings of huts, the same as those supplied to me when I was Commanding Royal Engineer on the Gold Coast. The width of the hut to be 16 ft. 6 in., instead of 14 ft.

I am of opinion that 100 miles of No. 12 B.W.G. wire should be sent out as soon as possible for entanglements in front of the works.

The country is quite open, and we must depend on such entanglements for obstacles.

Materials for 150 miles of telegraph (to provide 60 miles of double line and one quarter spare), including insulators, and 30 offices should be kept ready to be shipped at an early date.

Detailed drawings, lithographed, of gun platforms should be made and sent out. I think two layers of 3-inch planks spiked together, or put together with tronails, might answer, but it is desirable to have drawings prepared.

I do not anticipate much difficulty as regards water supply, but several force pumps, similar to those used during the manœuvres of 1872, and a quantity of 2-inch piping with flange joints, washers, and bolts should come out. In addition, a large number of ordinary pumps with flexible suction hose.

The difficulty of finding road material appears so great that I contemplate, under certain circumstances, the construction of plank roads, or, perhaps, the use of a very light narrow-gauge line, somewhat similar to the common trench railway.

About 10 miles of such railway, with the requisite carts or trucks to be hauled by mules or horses, should be prepared and kept in readiness.

By such means I hope that the troops may always be in communication without trouble with the base of operations—viz., the Army stores at the powder manufactory, even under the most unfavourable circumstances of weather.

It will be observed, that if the precautions I have named be adopted, the troops actually holding the lines will require but a small portion of horse transport, and that perhaps one pair of horses per wagon will at least at first be sufficient.

If the army, however, leaves its lines the full amount of horses will be absolutely requisite.

No reference is here made to the Gallipoli lines, which will form the subject of another communication.

I have the honour to be,
Sir,
Your most obedient Servant,
R. HOME, *Lieut.-Col. R.E.*

The Inspector-General of Fortifications.

No. 3.

KALLIKRATIA, BUYUK CHECKMAGEE.
25th November 1876.

Sir,

1. I have the honour to report that a considerable portion of the sketch between Jaserin and the Black Sea has been completed, and that plans for 6 redoubts have been made, and the works all marked out on the ground with pickets.

Viewing the advanced season, and the state of the weather, it is advisable to push on the outdoor work as rapidly as possible. The Strandja or Little Balkan mountains are the dividing ridge between the Black Sea and Sea of Marmora, they catch all the fogs and rain, and as the whole of the sketching is now being done on the slope of these hills, there is much delay. Seven good fine days would complete all, or nearly all of the most pressing work; but at this season seven fine days can hardly be expected.

2. I am now in a position to inform you that the main line, or that extending from Buyuk Checkmagee to the Black Sea, may be firmly held by 13 large redoubts. The sites of these have been definitely fixed.

Emplacements for the field artillery and minor works will be requisite between the principal works.

3. The advance line on Kallikratia position to cover the harbour of Buyuk Checkmagee, requires no fewer than five first-class works, and even then this position leaves much to be desired.

It is manifest that the garrison of this position is detached from the main position with which it communicates by the long narrow series of bridges (750 yards long) which separate the Buyuk Checkmagee harbour from the lake or backwater.

Reinforcements for this portion of the position could only be sent by moving troops from the right, and then passing the long bridge just referred to.

In case of any reverse, the troops holding this position would be very seriously compromised.

Viewing these facts, and the great amount of work required to hold this position, nearly one-half of what is required for the whole line from sea to sea, the question immediately arises, are the advantages gained by holding this advanced position, of sufficient magnitude to justify its being held?

It is submitted that the disadvantages attendant on holding this position far outweigh the advantages gained; but the advantages to be gained from holding a position that requires 10,000 men, 25 guns of large calibre, three field batteries, and five large redoubts, should be very great indeed, and it is submitted that such advantages do not exist.

There are but two reasons why this position in front of Kallikratia should be held.

(*a.*) To retain the use of the harbour at all times for transport and supplies.
(*b.*) To enable the army to take the offensive by holding a debouche on the western side of the position.

The harbour can be used for disembarking troops when they first arrive, as it is not to be contemplated that at this period an enemy will have advanced sufficiently near to prevent or even harass such an undertaking. There being no road from south to north of the position, stores and supplies landed here will really be farther from the centre and north end of the line, than if landed at Kutchuk Checkmagee or the Powder Works, further if not in actual distance at least by difficulties.

The first work of the main line is behind the village of Buyuk Checkmagee. The next is on the hill, immediately north of the Esskidshi Tchiftlik, and the next in the loop of the Railway, close to the words "Watch hut" on the plan.

If there are no troops in advance of the harbour, or in other words, if the Kallikratia advanced position be not held, the only troops to draw supplies

from the harbour, would be those holding the Buyuk Checkmagee redoubt. This redoubt is, however, quite close, within 50 yards of the Adrianople road, which most fortunately is as far as this place a very good macadamized road, indeed the only such I have seen.

So far then, as supply goes, there can be no reason why such a large force as 10,000 men should be employed to ensure the supply of a force of 2,000 forming the garrison of the Buyuk redoubt.

Further, the presence of one ironclad would compel an enemy to retire his field guns so far, that so long as such a vessel was in the harbour, supplies might be landed if such were really requisite. So far then as supply is concerned, there can be no reason why the harbour should be covered by a line of works requiring so large a garrison as 10,000 men. As regards a debouche from the lines, it may be argued that if we occupy a merely defensive position, we are wilfully giving up our chance of seizing the offensive. To this it may fairly be replied, there are two ways in which the offensive may be taken—either in force, hoping to retain and keep it, or after the fashion of a sortie.

As regards taking the offensive in force, I respectfully beg to submit that troops holding such a line as that across the Peninsula between the Black Sea and Sea of Marmora can best take the offensive by using their undoubted supremacy at sea, and by throwing a force ashore, either at Varna or Rodosto, on the flank and rear of the enemy.

If the object be merely a powerful sortie, it is submitted that the 10,000 men will be of much greater value, held in hand for the purpose, than if placed behind the Kalfikratia position.

Further, an enemy must move chiefly by the Adrianople road, and the railway used as a common road, consequently his attack, especially in winter, must be on this very advanced line. Are we wise in placing so large a portion of our limited force in advance of the backwater, and giving up the great protection it affords, to occupy a position which can be supported with great difficulty, and from which the troops could not be extricated in case of disaster without sustaining very heavy loss?

Having given the subject great and careful consideration, I have come to the conclusion that the disadvantages of holding the position far outweigh the advantages; and, consequently, unless I receive special instructions to the contrary, I shall not construct this advanced line.

I am further induced to consider that this conclusion is a correct one, from the fact that steam launches with guns cannot be placed on the lake or backwater, as I had hoped might have been the case.

4. In my letter to you (No. 2), I ventured to divide the whole of the work to be executed under 12 distinct heads.

In carrying out works of such magnitude, and for which a limited time is available, it is a matter of no little importance to determine which portions should be pushed forward most rapidly.

I submit that the most important portions of the work are the communications. To construct redoubts that cannot be armed, to place troops in position who cannot be fed, are impolitic measures, and I submit most respectfully that the first thing to be done is to ensure the feeding of our men and the arming of our works.

5. The only road, as I have previously said, is that from Buyuk Checkmagee to Constantinople, a really fair road in any country. The railway will supply the redoubts on each side, but nothing more. Having ridden repeatedly over the country in every direction, I am unable to describe the roads otherwise than by comparing them with heavy plough in England after a fortnight's rain.

Feeling strongly the urgency of the case, I applied to his Excellency Sir Henry Elliot for authority to begin a survey for a line of railway from a point about 1,000 yards east of the point marked "summit level" on the map, to one about 1,000 yards north of the village of Jaserin; at the same time I asked his Excellency to name some person, qualified both professionally and by his discretion, to undertake the survey. Sir Henry Elliot was kind enough to accede to my request, and the survey is now being made by a French gentleman.

Having roughly marked out the road, I believe by adopting the same limits as regards curves and gradients as on the Adrianople line, the railway

may be made with little cost or trouble; as I have already reported, rails and sleepers are available, which, being the property of the Turkish Government, can, I presume, be obtained for nothing.

So soon as the survey is complete, a tracing showing full particulars will be sent home.

From this line of railway, and from the main line, it is proposed to lay lines of tramway to each redoubt. By these means I hope to ensure, at all seasons and at all times, not only the arming of the works, but also the supplying of their garrisons.

It is too soon for me to offer any but an approximate estimate. I think, however, the line and tramways may be laid for 35,000*l.* to 40,000*l.* I view this expenditure as absolutely requisite, and I need only refer to the Crimean war, when a railway, 6 miles long, was constructed at a cost of 200,000; and even at that enormous cost it would have been cheap, had it been made six months sooner. Should the troops not arrive until April, the tramways may perhaps be dispensed with.

6. Next in importance to the arming of the redoubts and feeding the men may be placed housing the troops. An English army is a costly machine. Men are difficult to procure, and the outlay on such matters is but a trifling percentage on the whole cost.

I have carefully examined the many farms and villages inside the lines and slightly in front of them, and I am of opinion that about 35,000 men may be very comfortably put up.

The houses are by no means so bad as would at first be imagined. I have slept in many of them and visited others. By a liberal expenditure of whitewash and lime I think they will do very well. After the middle of April of course the men may be placed under canvas. But these villages do not always occur where they are wanted, and we can never leave our works without a strong guard. This guard, or "garnison de sûreté," for the 13 redoubts may perhaps be put at 7,000 men; for this number I propose to erect huts close to the redoubts. Should the lines be constructed and occupied prior to the middle of April, I submit respectfully that these huts are absolutely requisite, it being in my opinion unadvisable to try our men's health, more especially at the beginning of the campaign, before they have settled to their work, and immediately after leaving comfortable quarters in England. I am not yet in a position to say whether or no these huts can be made here, but from some information I have received I am disposed to think they can,—at all events all except the roofs. But I would submit that designs for 14 blocks of huts, each to contain 500 men, with a proper proportion of officers, should be prepared, and that the best means of sending them out should be considered.

7. I must apologise for sending such general reports, but I trust to be able to furnish a complete report, showing all requisite details, in a short time. Meantime it appears advisable that His Royal Highness should have every portion of information on these subjects, even in an unconnected form, rather than that he should wait for a fuller and more complete report.

I venture to submit that the number of officers should be increased, and that a paymaster should be sent out in case the works are ordered to be executed. I feel sure the public service will benefit by increasing the number of officers, and sending out an officer to take up all payments.

8. I beg most respectfully to request that you will be good enough to inform His Royal Highness that we are even now perfectly ready to begin work, should he deem it desirable to issue orders to that effect; while such is the case, I need hardly point out that each day improves our situation.

I have, &c.,
R. HOME,
Lieut.-Col. R.E.

The Inspector-General of Fortifications.

No. 4.

CONSTANTINOPLE,
11*th December* 1876.

Sir,

In my letter No. 2, I had the honour to inform you that I had with the sanction of His Excellency, Her Majesty's Ambassador—begun a survey, for a line of railway from the Hademkeui station on the Adrianople line of railway to the village of Jaserin; both places are marked on the map recently supplied to you. The actual point of bifurcation being about 500 yards from the summit level, and the actual terminus 1,000 yards north of Jaserin.

I forward to you tracings, showing the proposed line and sections.

These tracings are marked A and B. I also furnish estimates for the cost of construction, in accordance with each plan.

The sole difference between the plans being that in the plan marked A the curves are struck with a radius of 350 metres; in the plan marked B, the radius is reduced to 250 metres.

The object of making such sharp curves is to sweep round the heads of valleys rather than cross them, and so reduce the earthwork, and consequently the expense and time requisite.

I may observe that the Adrianople line has curves quite close to the proposed junction of 250 yards nominal, 215 yards real, radius, and that goods trains of 30 carriages pass a dozen times a day over these curves at a speed not exceeding 15 miles an hour with perfect safety. I am aware that the curves I propose are sharp, and perhaps may appear dangerously so; but I submit it is needless to make the branch lines more perfect than the main line. Further, this railway need not be worked at any great speed—and I feel sure that the increased speed of execution will amply repay for the reduced train speed.

I feel sure this railway is an absolute necessity; being so, it should be designed so as to be ready when wanted, and for this purpose I have cut down all extraneous earthwork, provided for making the culverts in wood rather than masonry; done away with platforms (moveable ramps will answer for horses, guns, sick and wounded), and in every way I could kept in view the fact, that after two years the railway will be useless, but that it must be ready in one month.

I therefore recommend for adoption the plan marked B.

You have already been informed that sleepers and rails sufficient for the purpose are here in possession of the Turkish Government, being of precisely the same section as those in use on the Adrianople line. With reference to the estimate I venture to offer some remarks. My remarks deal with the figures in estimate B, but are equally applicable to the other or estimate A. I find that the contract rates for earthwork, not requiring blasting, that is, when the rock may be taken out with the pickaxe, sand, clay, or loam, were:—

On the Adrianople line	.. ..	1·80 Francs
On the Ismidt line	.. .. ..	2·08 „

The former price is assumed in the estimate, and at that figure the cost of the line would be 33,815*l.* As, however, it is proposed to insert in the contract a clause to the effect that the line must be completed in 31 days from the order to begin work being given, and that a sum of 8,000*l.* must be lodged in the bank in the name of such person as Sir Henry Elliot may choose to select, such sum to be forfeited if the line is incomplete on the 31st day, I believe no contractor will undertake the line without much higher rates for earthwork; 50 per cent is added to all work not matériel. I consider this a fair addition, viewing the average rate of progress of lines. I believe, the rate would be one-quarter slower on this line, which, under ordinary circumstances, would take four months to construct. To complete it in one month, four times the labour, superintendence, and plant will be required to be put on at once, and looking to all sides of the question, I think if we get the line made in a month for the figures named, we will have every reason to congratulate ourselves.

That is to say:—

	£
Cost of line	33,815
Extra cost for speed	6,473
Total	40,288

or about 8,000*l.* a mile.

But from this sum I think the following may fairly be deducted, being the eight items I have marked in the estimate:—

	Francs
Sleepers	99,442
Rails	269,600
Fish plates, bolts, &c.	14,300
Cross-overs	1,400
Points	3,200
Turn-tables	50,000
Telegraphs	4,925
Instruments	2,000
Total	444,867 = £17,794.

These deductions are made for the following reasons:—

The sleepers, rails, &c., are the property of the Turkish Government, and are now stacked in heaps as useless lumber, and may under the circumstances contemplated be supplied gratis by that Government.

The turn-tables I do not think requisite, as for such a line the engine may very well make the return journey to Hademkeui tender foremost.

The telegraph would come into the general telegraph system for the lines.

Making these deductions, the cost of the line would be 22,494*l.*

But it is possible, that the Turkish Government while expressing its readiness to give the rails and sleepers for the defence of its capital, might express their inability to pay for their transport. I have had an estimate prepared for the removal of these rails and sleepers from Ismidt or Salonika, where they are now, and the cost I find amounts to 5,096*l.*, which sum includes the transport of all the rails and sleepers required for the tramways as well as the railway. Adding this sum to the 22,494*l.*, the actual cost of the railway would appear to be 27,590*l.* I am unable to retain copies of the documents I now forward to you, and I beg that you will be good enough to return them to me at as early a date as possible, with your remarks. The advantage of having the rails and sleepers on the spot is very great, especially at a moment when a very large amount of vessels must be taken up for the transport of stores, horses, and men. Feeling deeply the absolute necessity for the construction of this line, should I receive instructions to begin the works, I shall immediately enter into contracts for its construction, and push it on as rapidly as possible. I need hardly recall to your mind the Crimean railway, nor need I point out, that a rough railway that does what is required, and is ready when it it is wanted, is an engineering success, while a more elaborate construction, that is only ready after the time for using it has passed away, is an engineering failure, even though the latter be the cheaper and better line.

Should you therefore be of opinion that this line ought not to be made, *it will be requisite to telegraph orders not to make it*, as without such definite instructions I should conceive it to be my duty to push it on as rapidly as possible, and act accordingly on getting His Excellency's instructions to begin work.

I have the honour to be,
Sir,
Your most obedient Servant,
R. HOME, *Lieut.-Col. R.E.*

The Inspector-General of Fortifications.

Enclosure (A) *in No. 4.*

SERIE DE PRIX pour la construction de 9 k. 500 m. de chemin de fer.

Indication des Ouvrages.	Quantités.	Prix.	Sommes.
		f. c.	f. c.
Cube de déblais et remblais y compris l'emplacement des gares et stations.	110,000 m.	1 80	198,000 00
Aqueduc en bois et passage a niveau 3,000f. par kilomètre.	110,000 m.	1 80	28,500 00
Ballast 1m. 50 par mètre courant	9 k. 500 m.	7 50	71,250 00
Ballastage des gares	7,650 m.	3 00	22,950 00
Traverses en chêne 1,050 par kilo. 9,975	13,839	7 00	96,873 00
Traverses pour les gares 3,864			
Rails 26,300m. a 25 kilos. par mètre	650t.	400 00	260,000 00
Éclisses, crampons, boulons et plaques	25t.	550 00	13,750 00
Croisements	3t.	400 00	1,400 00
Aiguilles	16	200 00	3,200 00
Stations	2	6,000 00	12,000 00
Remises pour 2 machines	2	5,000 00	10,000 00
Plaques tournante compris la pose	2	25,000 00	50,000 00
Pose de la voie	13,180 m.	2 50	32,950 00
Pose des croisements et aiguilles	16	100 00	1,600 00
Reservoirs	1	5,000 00	5,000 00
Télégraphe avec fil de 0,005	9 k. 500 m.	500 00	4,750 00
Appareils et accessoires	2	1,000 00	2,000 00
Total			817,823 00
A ajouter 10 per cent. pour travaux imprévus			81,782 30
			899,605 30
A ajouter 50 per cent. sur les travaux à executer (sur la somme de 355,250 f.) pour les faire éxecuter dans le délai de 30 jours.			177,625 00
TOTAL			1,077,230 30

NOTE SUR LE TRACE ET LA CONSTRUCTION.

La longueur totale est de 9 kilomètres 500 mètres, compris entre le kilomètres 53+400 de la ligne du chemin de fer de Constantinople à Andrinople, jusqu'au village de Jasserine.

Le tracé a partir du raccordement suit toujours la rive gauche de la vallée de Jasserine avec des courbes d'un rayon de trois cent cinquante mètres au minimum, d'un alignement droit de 90 mètres au minimum entre deux courbes de sens inverse, avec des rampes et pente de 0·012 au maximum.

La ligne sera établie pour une seule voie d'une largeur de 1 m. 50 d'axe en axe avec des rails comme la ligne de Constantinople.

La largeur de la ligne sera de 5 m. 10 avec des talus de 1 m. 50 pour

1 mètre pour les remblais, et de 5 m. 10 entre les crêtes des fossés pour les tranchées avec rigole de 0 m. 30 de profondeur et des talus de 0 m. 50 centimètres par mètre.

La hauteur du ballast sera d'une épaisseur de 0 m. 45 centimètres.

Les traverses auront une longueur de 2 m. 50, et les rails de 7 m. 65 en acier du système Bessemer, du poids de 25 kilos. par mètre.

Les traverses seront espassées de 0 m. 00 d'axe en axe c'est a dir 8 traverses par longueur de rails.

Il y aura deux stations, une à l'embranchement et l'autre à Jasserine, la longueur des gares sera de 400 mètres entre les poteaux d'arrêt, de 4 voies avec une plaque tournante à la gare de Jasserine.

Tous les aqueducs seront en bois.

Enclosure (B) *in No. 4.*

SERIE DE PRIX pour la construction de 9 kil. 850 m. de chemin de fer.

Indication des Ouvrages.	Quantités.	Prix.	Sommes.
		f. c.	f. c.
Cube des déblais et remblais de toute nature, y compris l'emplacement des gares et stations.	75,000 m.	1 80	135,000 00
Aqueducs en bois et passages a niveau, 3,000 f. par kilomètre.	9 k. 850	3,000 00	29,550 00
Ballast 1 m. 50 cube par mètre	9 k. 850	7 50	73,875 00
Ballastage des gares	7,650 m.	3 00	22,950 00
(1). Traverses en chêne 1,050 par kilomètre pour 9 k. 850 10,342	14,206	7 00	99,442 00
Traverses pour les gares 3,864			
(2). Rails 26,300 m. à 25 kilos. par mètre	571 t	400 00	269,300 00
(3). Éclisses, crampons, boulons et plaques	26 t	550 00	14,300 00
(4). Croisements	3 t	400 00	1,400 00
(5). Aiguilles	16	200 00	3,200 00
Stations	2	6,000 00	12,000 00
Rémise pour deux machines	2	5,000 00	10,000 00
(6). Plaques tournantes, y compris la pose	2	25,000 00	50,000 00
Pose de la voie	13,180 m.	2 50	33,700 00
Pose des croisements et aiguilles	16	100 00	1,600 00
Reservoirs	1	5,000 00	5,000 00
(7). Télégraphe avec fil de 0,005 mill.	9 k. 850 m.	500 00	4,925 00
(8). Appareils et accessoires	2	1,000 00	2,000 00
Total			768,542 00
A ajouter 10 per cent. pour imprévus			76,854 20
			845,396 20
A ajouter 50 per cent. sur les travaux à éxecuter (sur la somme de 323,675 f.) pour faire éxecuter les travaux dans le délai de 30 jours.			161,837 50
TOTAL			1,007,233 70

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No. 5.

CONSTANTINOPLE,
Sir, *12th December* 1876.

BEARING in mind the various requirements of an English expeditionary army sent to this country, to occupy the defensive line extending from the Sea of Marmora to the Black Sea, it would seem that there is no point that requires more consideration than the actual point of disembarkation, and the site of the depôt for reserve stores.

In my letter to you (No. 1), I informed you that I had detailed Captain Ardagh, R.E., to report, conjointly with a naval officer detailed for this duty by Admiral Sir James Drummond, K.C.B., commanding Her Majesty's fleets in these waters. I have the honour to forward reports by these officers. On receipt of these reports I had an interview with the Admiral, and have personally examined the coast, in conjunction with Captain Anstruther, R.N. After obtaining the very valuable advice and assistance of Captain Anstruther, and the opinion of the Admiral, who has deeply considered this question, I have the honour to report as follows:—

1. It does not appear absolutely requisite that the troops should be disembarked at the same point as that selected for the store depôt. There are some advantages incident on such an arrangement; but there are many disadvantages; chiefly those arising from the necessity of stopping the disembarkation of stores while the troops are being landed. By selecting different places, both operations may be carried on simultaneously. When the troops arrive, there will be definite instructions ready as to where each unit, battalion, battery, or regiment is to go, so that there need be neither confusion nor delay in marching them off as they land. Further, the short distances they have to march renders the value of railway transport of less importance, especially when a single line of rails is dealt with, than such a railway is to the transport of stores. Hence the troops may disembark at some place a few miles distant from the railway, but the stores must be disembarked in close proximity to it.

2. Bearing this in mind, I have the honour to submit that the Cavalry and Horse Artillery should be disembarked at Silivri and move to the front, and so cover the front of the lines, seek for and obtain information of the enemy's advance, and cover the whole front in such a way that small parties of his Cavalry pushed on may not interfere with any operations going on in rear, or cause either confusion or panic in the country: as the enemy advances in force the Cavalry and Horse Artillery would have to return and gradually seek the cover of the lines, but the mere fact of the British Cavalry being some two or three marches in front will delay an enemy's advance, and compel him to move with both care and caution.

3. It is submitted that the Infantry should land by divisions accompanied by the Artillery at Buyuk Checkmagee, the troops intended for holding the northern end of the lines landing first, and moving to their positions, being followed by the troops destined for the centre, the last to land being those intended to hold the Buyuk Checkmagee, or southern end of the position, the Corps Artillery and Engineers landing at the same place. The landing at both Buyuk Checkmagee and Silivri may take place simultaneously.

4. It has been said that the disembarkation of the stores, and the formation of the reserve depôt, must be at some place where the railway is close to the coast line. From its terminus on the Golden Horn to the village of Kutchuk Checkmagee the railway skirts the coast; from that point it diverges from the coast line, the distance being increased as progress is made to the westward. It therefore becomes manifest that at some place between the terminus on the Golden Horn and the village of Kutchuk Checkmagee the store depôt must be placed. By far the simplest means would be to place it within the city walls, at the terminus on the Golden Horn. But in my opinion the objections to such a measure are so great that it cannot for one moment be taken into consideration.

The objections are:—The space available is very restricted; the houses in the neighbourhood are all largely composed of wood, and should a conflagration take place, the result might be most disastrous. The fires at Varna and Gallipoli are warnings as to this danger, and are evidences of the great rapidity with which eastern cities, constructed as this is, are consumed.

There would be great difficulty in preserving the stores from theft in such a locality, occupied by a teeming population composed of all nations and creeds. The above reasons, in my opinion, are quite sufficient to forbid the formation of a store depôt within the city wall.

The selection of sites without the walls is, as I have already said, limited to the coast line between the Kutchuk-Checkmagee River and the city wall. Having repeatedly examined the coast, I conceive that the best plan is that near the village of Makra-Keui. The railway is here some 800 yards from the shore, which is slightly curved by a point of land running out, which covers the beach partially from the south-west. The best position for the depôt is on the eastern slope of the ridge of hills which sweep round the city from the Bosphorous, attaining the greatest elevation above the Sweet Waters, at the head of the Golden Horn, and which sink gradually to the south and terminate in the point of land referred to. The two large barracks, Daoud Pasha and Ramid Tchiftlik, occupy points on this ridge of hills which may be said to form the inner or last defence of the city. The southern extremity of these hills, close to the village Makra-Keui, has been extensively quarried for stone, indeed it bears traces of having yielded much of the stone used in the construction of the ancient wall. The site of the depôt is on the eastern slope. It is well drained; there is abundant stone to make roads; it can be easily protected and so arranged as to require a small force to protect it: indeed, so far as the land position is concerned, it is perfectly satisfactory.

As regards the sea position, it is not so satisfactory. There are at present only three wharves available, at two of which heavy stores may be landed, at the third only light stores. At each of these wharves vessels drawing 10 ft. of water may now be unloaded.

The question at once arises, Should we construct wharves running out into 4 fathoms, or should we be contented with wharves running out only into 10 ft. of water? The answer may, I think, be found by considering that the true spirit of military engineering is to adopt local customs, and adapt local resources, so as to obtain the maximum result in a given time.

The whole system of unloading ships adopted here is by the use of lighters, or trans-shipment; people are accustomed to it, and large bodies of the native "hamil," or porters, are organized for this purpose, there being, so far as I can find out, only two berths close to the railway terminus where ships of 1,500 tons may berth.

I should propose, therefore, to construct at least six wharves on piles, running out some 40 yards, so as to reach a depth of 10 ft. of water, to run rails on to them, and unload lighters at these wharves.

I am informed by the Admiral that the Sea of Marmora is subject to short, though violent, gales from the south; these gales send the sea tumbling in on this coast, and, although such gales are transient, yet I confess, viewing the means at my disposal, I shrink from attempting to run pile wharves out 100 yards to sea with the local resources. Floating wharves supported on the large caiques would, I conceive, be very difficult to arrange for such a great length with one end unsupported. Further, 100 yards of wharf, with a T end long enough to berth a steamer, would require more labour and time to construct than six wharves 40 yards long, and, as regards the discharging of ships, would, I conceive, be far less efficient, the cargo of only one ship being unloaded at one time in the case of the long wharf, while the cargoes of at least a dozen ships may be discharged by means of lighters simultaneously at the six wharves. Further, I conceive that by placing these wharves in echelon, and slightly bending their ends, it will be possible to use them to leeward even in heavy weather, while I much doubt a large steamer being able to remain at her moorings at the end of a wharf 100 yards long in even moderate weather.

The holding-ground in the roads is, I am informed, very good, and ships, if well found, might easily ride out a heavy gale; in any case they could slip their anchors and bear up for the Golden Horn (not seven miles off), where they would be perfectly secure.

The two berths close to the railway terminus may be used for special stores, which can be loaded on trucks as they come ashore and sent at once to the depôt by rail.

To recapitulate, I submit that the depôt for reserve stores should be formed at Makra-Keui; that six wharves, to take lighters drawing from 8 ft. to 10 ft., should be constructed there; that the wharf where two vessels may come along side, close to the railway terminus in the Golden Horn should be also used—no depôt being formed at this terminus, but the whole of the stores at once loaded and sent out by rail to Makra-Keui.

I am the more disposed to urge these views because they are in consonance with the views of the Naval authorities. Should I receive instructions to go on with the works prior to the receipt of orders from you, the arrangements will be made as above described.

As I am unable to retain copies of the reports I now send, I respectfully beg that you will be good enough to have them copied and returned to me. I must, at the same time, apologise for their blotted state, which arises from their having been in a bag which unfortunately got wetted by a fall into the sea.

I have the honour to be,
Sir,
Your most obedient Servant,
R. HOME, *Lieut.-Col. R.E.*

The Inspector-General of Fortifications.

P.S.—It will be most desirable to provide each wharf with a crane, and I submit that the derrick cranes with a shifting jib, as used in the quarries of Portland, and fitted with timber guys, should be supplied. These and a certain number of rack jacks will form a portion of the demand for stores I shall submit in a short time.

R. H., *Lieut.-Col. R.E.*

12th December 1876.

Enclosure 1 in No. 5.

JOINT REPORT by Captain ANSTRUTHER, H.M.S. "Bittern," and Captain ARDAGH, R.E., on the Harbour, &c., of Buyuk Tchekmedjé.

Sir, *Constantinople, 22nd November* 1876.

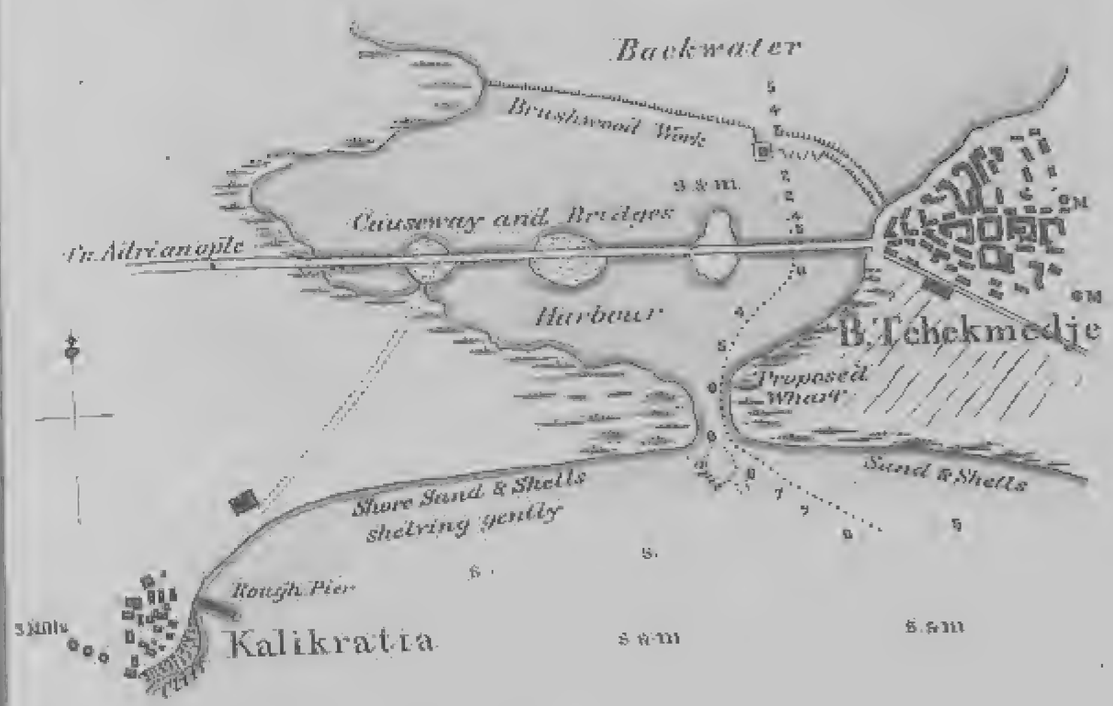
IN accordance with our instructions we visited Buyuk Tchekmedjé yesterday, the 21st November, in H.M.S. "Helicon." The bay is 2½ sea miles across at the mouth from Baba Burnu, or Hagios Elias Point, to Kaldyrim Point, and 2½ sea miles deep from that line to the head. The 5-fathom line is distant from the shore from 400 to 800 yards, and the middle of the bay varies from 8 to 16 fathoms, the bottom being in most parts mud, and good holding ground. The shore, except at the head of the bay, consists of a narrow beach of sand and shells, with cliffs of a soft loamy sandstone rising from 20 ft. to 100 ft. and presenting several accessible breaks. The head of the bay for 3,500 yards has the same description of beach with flat ground in rear. Throughout the water shoals gradually, and there are no rocks or hindrances to navigation. Allowing the large scope of 2 cables (400 yards) three lines of three ships each may anchor in the bay under complete protection from all points except from S.S.E. to S.W., and landing is practicable on the beach at all points and in all winds except those just mentioned, which are exceptional, the prevailing winds being from the north.

Landing.

Jetties.

The mere act of landing, then, presents no difficulties, but as the beach is shelving, it would be necessary, in order to disembark men and stores dry, either—first, to make a wharf, or wharves, alongside which the transports might discharge; or second, to lay jetties at which boats or flats might unload.

SKETCH OF HEAD OF BAY



Scale about 200 Yards to 1 Inch

Lith^d at the Q^r Mr Genl Dep^t under the direction of Lt Col. R. Home, C.B. R.E.
6.1.77.

We have considered the first method, and have taken soundings for the purpose of ascertaining the approximate length of pier necessary, and we find that it would exceed 400 yards. Taking into account this great distance for a floating structure (for time would preclude the formation of a pile bridge), and the fact that it would virtually be at the mercy of the first southerly gale, we cannot recommend this method of landing.

The second mode, viz., that of short jetties for boat landing, will be practically the best, particularly as we understand that it is only contemplated to land troops and light stores here. The nature of the jetty should, we conceive, be a straight flat platform of 1½ in. planking 4 ft. above the water, supported upon small piles, which may be driven by hand as the work progresses. These jetties should be run out to 7 ft. water at the end, so that steam cutters and launches may tow up to them, but they need not have a large head, as the boats may lay alongside to leeward in order of their draught to discharge. About 80 to 100 yards would be their general length.

The nature of the inner harbour may be best understood from the above sketch. The entrance is about 70 yards wide, and has a depth of from 6 ft. to 8 ft., the fairway approaching from S.E., and following close to the eastern shore. A small basin between the entrance and the bridge would shelter above 20 small craft of 6 ft. draught. There is a channel for 4 ft. draught through the centre of the east bridge, and for 50 yards beyond. The water there shoals to 2 ft., mainly in consequence of a dam or barrage of stakes and hurdlework, constructed for the purpose of fishing. Narrow openings, which can be closed by lattice work gates to prevent the escape of fish, admit caiques through this barrage into this backwater, in which there is a depth of from 4 ft. 6 in. to 8 ft., but which cannot be considered as navigable for craft above 3 ft. to 3 ft. 6 in. At the date of our visit a good deal of land water was flowing from the various streams and brooks into the backwater, and the obstruction produced by the barrage raised the level of the backwater 9 in. above the sea. In dry weather there is no perceptible difference. The backwater is slightly brackish, too salt for drinking at this end.

A very convenient landing-place may be made along the eastern side of the harbour for such heavy stores as may need to be disembarked at Buyuk Tchekmedjé. Here, for a length of 100 to 150 yards there is a depth of 6 ft. to 8 ft. of water within 30 ft. of shore, and the formation of a continuous stage presents no difficulty. It would, however, probably be sufficient to drive mooring piles, connected by a waling, to berth large barges against, and to form a few landing-stages or long brows to reach from them to the shore. Sheer legs of any size might also be employed here to unload guns. The adjacent land between the entrance of the harbour and the village is flat and cultivated, the soil a sandy loam. Landing place for heavy stores.

From Buyuk Tchekmedjé eastward the Adrianople road is macadamised and in good condition, about 18 ft. wide. The streets are roughly paved; the bridge is paved and has a roadway very solid, but rather rough, and 20 ft. wide. From Kalikratia westward, the Adrianople road is a mere track, but being on sandy soil, it does not become very bad in wet weather. The best line for march and transport on to the position is to follow the Constantinople road to the summit of the first plateau, and then turn north along the ridge stretching as far as Kara Aghatch. The tracks on the high ground will be in good order even in wet weather. Roads.

The 2 ft. bar, which we have described, prevents boats above that draught from entering the backwater, although there is water enough for the smallest class of steam cutter inside. The difficulty may be got over in three ways,—viz.:— Navigability of the backwater for steam launches, &c.

1st. By lightening the boat by removing the boiler and engines, and replacing them when the inner waters are reached, carrying them through on a raft of barrels, etc., or by lessening the draught by pontoons or barrels lashed alongside.

2nd. By increasing the depth, by forming a channel by the scour of the current guided by brushwood work on each side. This could be done in a week.

3rd. By dredging or digging out a channel by hand. This also could be done in a week.

As regards placing boats armed with guns on the lake, the most suitable nature would be flat-bottomed craft, such as ought to be sent out with the transports for disembarking artillery and horses. These boats having fulfilled their functions in that respect, might be armed with field or boat guns, and told off for use in Buyuk Tchekmedjé backwater or Derkos Lake.

It would be very desirable that they should be fitted with means of steam propulsion: but, if not, they may be towed by steam cutters.

In conclusion, we consider that in addition to the wharf, but few landing-jetties would be needed, inasmuch as that they are, as far as the men are concerned, not indispensable. Two jetties such as we have described, near the village of Kallikratia, and four near the wharf, at the entrance to the harbour, would probably suffice for all practical wants. If more are needed they should be in the form of long gang-boards supported on very light trestles, the minimum sufficient to enable men to get on shore without wetting their feet. These latter would be essentially of a temporary character, only to be used during the disembarkation.

We have the honour to be,
Sir,
Your most obedient Servants,
E. C. ANSTRUTHER,
Commander H.M.S. "Bittern"
J. C. ARDAGH,
Captain R.E.

Lieut.-Col. Home, C.B., R.E.

Enclosure 2 in No. 5.

REPORT ON THE PORT OF SILIVRI.

By CAPTAIN ARDAGH, R.E.

Constantinople, 23rd November 1876.

The town of Silivri lies on the northern shore of the Sea of Marmora, 37 sea-miles from Constantinople. There is a break in the cliffs, and a shallow bay with a mile of sandy beach at the head of it, on which there is good and smooth landing in all northerly winds, which are the prevalent ones, and in light southerly winds. The anchorage, similarly, is protected from the north, but quite exposed to the south. The town lies on ground rising quickly from the east side of the bay, and is bounded by an ancient wall in a dilapidated condition. There is a small pier or jetty, useful for boat landing.

The town is poorly built, partly stone, part wood, and all roofs tiled. The Kaimakam states that there are about 1,200 houses and 4,000 grown-up males, probably corresponding to a population of 9,500 souls.

The military importance of Silivri arises from the position which it occupies in connection with an advance on Constantinople. The main Constantinople-Adrianople road passes through it, and although this road is a mere track, which has never at any time been metalled, for a great part of its length it is by far the best of those on which it is possible to advance. The distances are as follows:—

SKETCH OF THE COUNTRY AROUND
SILIVRI

Scale of Yards, 2 Inches to 1 Mile

1000 2000 3000 4000

Sketched and Drawn by
J. C. Ardagh.
Capt. R. E.
H.M.S. Helicon, Constantinople
23rd Nove 1876.

Coast from Chart No 224.
Details by Eye Sketching.
Heights by Aneroid.

Lith. at the Q.M.G. Genl's Dept. under the Direction of Lt Col E. Bunbury, C.B. R.E.
6.1.77

From Silivri to Constantinople..			40	miles.
„	„	„ Buyuk Tchekmedjé	17	„
„	„	„ Tchataldja ..	13	„
„	„	„ Tchorlu	29	„
„	„	„ Rodosto* ..	43	„
„	„	„ Lulé Burgas ..	60	„
„	„	„ Adrianople† ..	105	„

The nearest railway station to Silivri is Kabakdjé (Kabaktscha on Kiepert), 11 miles north; but the road to Sinekli, the next station, is better and preferable, although the distance (14 miles) is slightly greater.

The country immediately around Silivri is quite open, and almost all under cultivation for cereals. The hills near the coast are gently rounded and become somewhat bolder inland. The valleys of the two streams falling into the bay are marshy, and in wet weather impassable except at the bridges and causeways. These streams would at any time supply water for animals, and drinking water seems to be abundant. There is no wood, beyond a few fruit trees, near the coast, but near the railway oak scrub becomes abundant, and at Sinekli a good deal of charcoal is made.

To cover a landing or embarkation there is a very good position on the west from Karga Burnu, along the hill S.W. of Yapaghi (Jarpadscha on Kiepert), and towards Fener. On the north it is difficult to draw a line, and it would be necessary, if the available force was large, to advance to Fener, if small to occupy the spur between the Tuzla and Tarlar valleys. On the east the country is not very favourable, but the line of crest curving round from Kaba Burnu to Tarlar Dèré is fairly good. It would be extremely difficult to land here in the face of an enemy, and retreating troops had better fall back to Kallikratia and Buyuk-Tchekmedjé. On the whole, therefore, Silivri is only adapted for an unopposed landing in fair weather. Position to cover.

J. C. ARDAGH,
Captain, R.E.

3rd November 1876.

Enclosure 3 in No. 5.

REPORT ON THE PORT OF RODOSTO.

By CAPTAIN ARDAGH, R.E.

Constantinople, 24th November 1876.

Rodosto Roads form the extreme north-westerly bay of the Sea of Marmora. The distance to Constantinople by sea is 67 nautical miles, and from Gallipoli 52 miles.

The anchorage and shore are protected by high ground from the north and west (the prevailing winds), but are thoroughly exposed from east round by south to south-west, and there is a heavy surf on the beach during strong winds from these points. It is said, however, to be always possible to land from small boats at the jetty in the middle of the town. The best landing for horses, guns, and boats which can beach, is west of the town, on a sandy beach

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* This road is along the coast, and is bad; the best route is through Tchorlu, 50 miles.

† This road is *viâ* Tchorlu and Lulé Burgas; there is another *viâ* Wisa and Kirk-Kilissé, 112 miles.

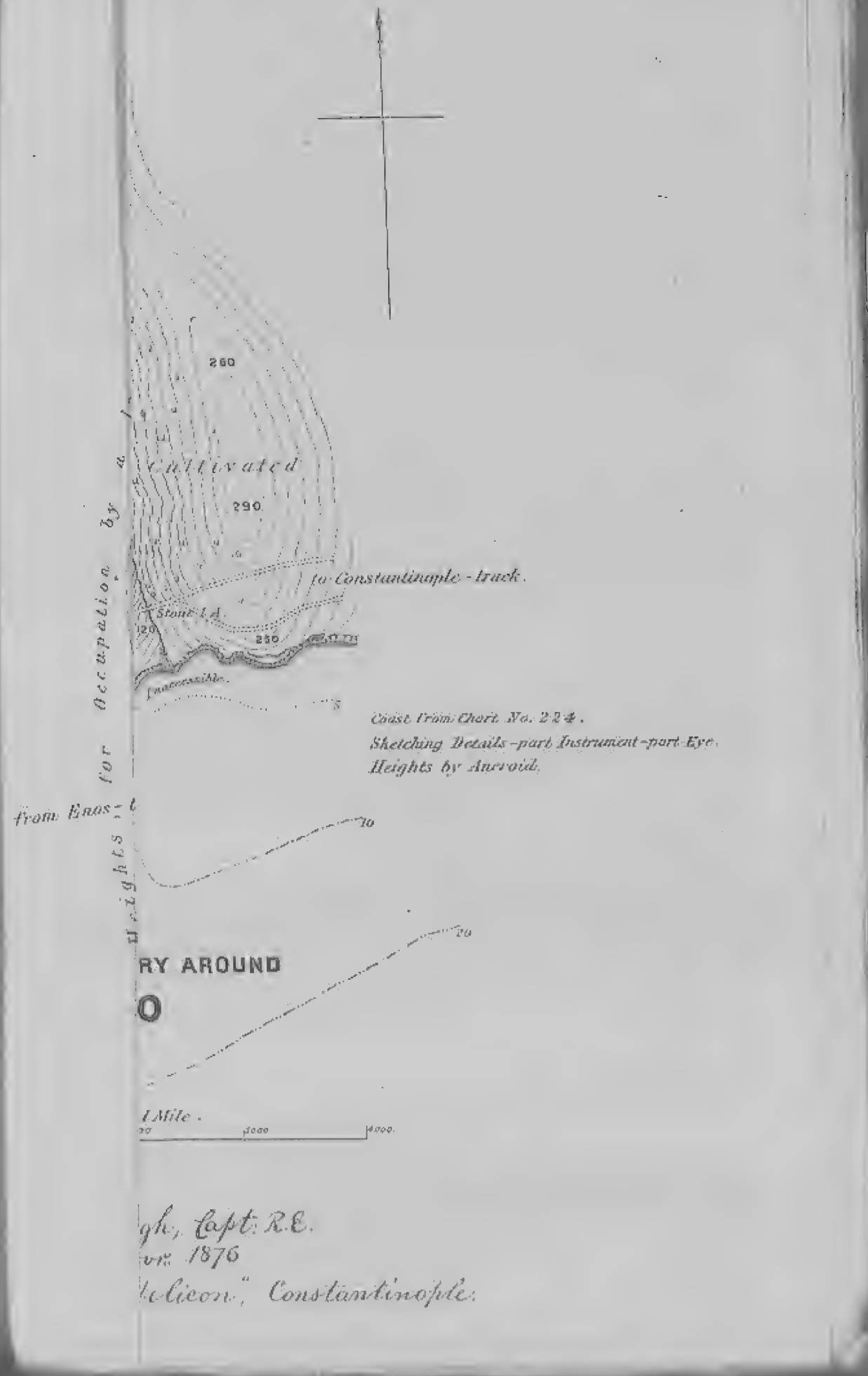
from which the 5 fathom line is only 300 yards distant. The town is built on hill slopes falling steeply towards the sea. It is built partly of stone and partly of wood, with tiled roofs, and seems very combustible. The Kaimakam states the adult male population at 20,000, but I am inclined to believe that he considerably over-rates it, and should estimate the gross population as not exceeding 55,000. The Turks and Christians are about equal in number, and agree very well. Rodosto was formerly the port of Adrianople, but that traffic has entirely ceased since the construction of the railways to Constantinople and Dedeaghatch. In favourable years the surplus corn is exported, but this year the harvest has been bad, and will only suffice for local consumption.

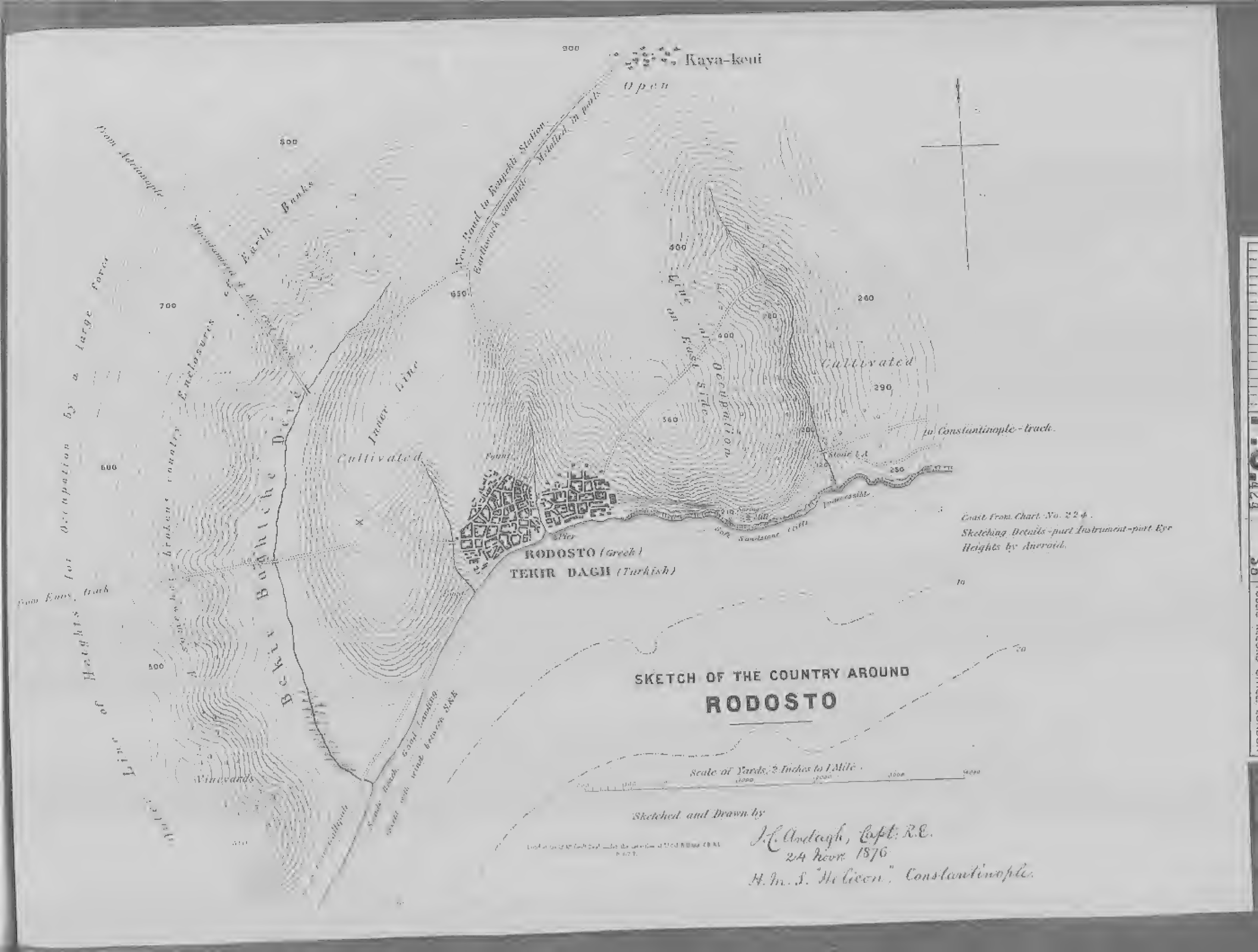
Rodosto is very well situated for an enterprise on the flank of an enemy moving on Constantinople, or for landing the cavalry and advanced troops of a force destined for the defence of the capital. It is the point of junction of numerous roads—most of them unfortunately bad. The distances are as follows :—

			Miles.
From	Rodosto	to Silivri	43
,,	,,	Tchorlu	20
,,	,,	Kopekli Station ..	13
,,	,,	Lulé Burgas Station ..	30
,,	,,	Koukli Burgas Station	63
,,	,,	Adrianople	80
,,	,,	Enos	90
,,	,,	Bulair Lines	55

Most of these roads are mere tracks, good or bad according to whether they pass over a sandy or a clay soil, and of course very dependent on weather. They are now (November) in an excessively bad state, and scarcely passable for any wheeled vehicles except strong arabas drawn by buffaloes (oxen are scarcely strong enough when the roads are so heavy). The horses of the country get along slowly, but as a rule the ploughed fields are at this moment rather better than the roads. The government a few years since caused a new road from Rodosto to Kenpekli Station to be commenced. It is broad and well laid out, and all the earthwork is complete, and a large quantity of stone for metalling is deposited in an unbroken state along the road, which is partly metalled in a few places. The works were then discontinued, and there seems no prospect of their completion. In the same way the road to Adrianople is fairly well macadamised for four miles out of Rodosto, and then becomes a track.

The country around Rodosto is bold. A few miles to the south-west the Tekir Dagh range, which rises to 2,700 ft., commences; and close on the north is the watershed ridge separating the basin of the Ergine (an affluent of the Maritza) from the Sea of Marmora. Near the town the hills rise from 600 to 900 ft. The soil is loam, and subsoil soft sandstone. The country is highly cultivated, and is very much closer than is ordinarily the case in Turkey, in consequence of the number of vineyards and fruit trees, and the earth banks forming the enclosures. The hills are rounded and consequently not very suitable for defence. The most important point to hold for covering the town and beach is the hill north-east of the town marked 560. A good defensible line extends from here north to the village of Kaya, where it turns west and follows the ridge bounding the Bakir Baghtche Dèré to the windmill and the shore. This latter part does not however cover the whole of the beach, and it would be necessary to occupy the higher ground to westward of the above-mentioned valley. I was unable from want of time to go all along this line, but considered it superfluous to do so, as to occupy the whole would need, not a covering force, but an army. The ground moreover is little suited for defence, being irregular and broken. The last southern spur, marked 410, should in any case be occupied, and posts placed on the Enos and Adrianople roads. Rodosto seems to be more adapted for landing the advanced troops of the force defending Constantinople than Silivri, and for the starting point of an operation towards Adrianople, or on the flank of an enemy moving either towards Constantinople or Gallipoli. It is particularly well placed for threatening the railways. In consequence of the exposure of the beach and the possible





Kaya-keui
Open
New Road to Kaupekli Station
Earthwork complete Metalled in parts
From Adrianople
Earth Banks
Macedonian & M. Cut
Enclosures
Inner Line
Cultivated
Line of Occupation on East Side
Cultivated
to Constantinople-track
Stair L.A.
Pier
RODOSTO (Greek)
TEKIR DAGH (Turkish)
Soft Sandstone Cliffs
Impossible
Coast From Chart No. 224.
Sketching Details-part Instrument-part Eye
Heights by Aneroid.
Bekir Baghtche Dere
Vineyards
Outer Line of Heights for Occupation by a large force
From Enos track
Sands Beach Good Landing
Sheet with wind between S.S.E.
SKETCH OF THE COUNTRY AROUND
RODOSTO
Scale of Yards, 2 Inches to 1 Mile.
Sketched and Drawn by
J. C. Ardagh, Capt. R.E.
24 Novr. 1876
H. M. S. "Helicon", Constantinople.

difficulties of re-embarkation, combined with the extent of covering line which it would be necessary to hold, I do not consider that it would be advisable to contemplate it as a point of retreat if the operation were likely to be interrupted by a superior force.

The best and most sheltered harbour along this coast is Erekli or Heraclea, which is protected by a projecting peninsula from every wind but east. The anchorage is however extremely small, and would not hold more than two or three large vessels. The landing place is also limited, and on a passing inspection I could not see any line which appeared defensible on the west side within reasonable distance. The east side offers a fair line, and the peninsula itself might be made extremely strong, having already great natural strength. Erekli is 20 miles from Tchorlu Station, 20 from Silivri, and 25 from Rodosto. The harbour is much frequented by small coasting craft from 10 to 50 tons. It is not so well suited as a base for minor operations as Silivri and Rodosto in respect of roads and distances, but the shelter of the harbour would be valuable, and the peninsula would be very well adapted to secure a small force, and to establish a store depôt. Erekli, or Heraclea.

Lieut.-Colonel. Home, C.B., R.E.

Inclosure 4 in No. 5.

H.M.S. "Helicon,"
Constantinople, 25th November 1876.

Sir,

Having reported myself to Admiral The Hon. Sir James Drummond on my return from Buyuk Tchekmedjé on the 22nd, he decided that it would be most convenient, having regard to the movements of the "Helicon," that I should at once visit Silivri and Rodosto. The "Helicon" accordingly landed me at Silivri on the 23rd inst., and at Rodosto on the 24th, returning that night to Constantinople.

As the weather was wet, and time limited, I was unable to make an accurate survey at either place; but the sketches which I have attached to my report appear quite adequate to the requirements of the case.

The main facts are: that landing is practicable, and that a covering position may be taken up at both those ports.

I next proceed with Captain Anstruther, H.M.S. "Bittern," to examine the coast towards Kutchuk-Tchekmedjé.

I have the honour to be,
Sir,
Your obedient humble Servant,
J. C. ARDAGH,
Captain, R.E.

Lieut.-Col. Home, C.B., R.E.

Inclosure 5 in No. 5.

JOINT REPORT ON THE COAST OF THE SEA OF MARMORA BETWEEN KUTCHUK-TCHEKMEDJE AND STAMBOUL: with reference to the selection of Sites suitable for the construction of Landing Stages, and the erection of Store Buildings.

By Commander ANSTRUTHER, R.N., and Captain ARDAGH, R.E.

H.M.S. "Helicon,"
Constantinople, 30th November 1876.

Sir,

1. We have the honour to report that, in accordance with instructions, we visited the entrance to the Kutchuk-Tchekmedjé backwater, and inspected

the coast between that point and Constantinople, with a view to ascertain the locality most suitable for establishing landing stages and store depôts for a force employed to cover Constantinople.

Kutchuk-Tchekmedjé. Entrance.

2. The entrance to the Kutchuk-Tchekmedjé backwater is kept open by a roughly-formed line of piling and planking on either side, extending about 50 yards from the water's edge, through the spit of shingle to the channel within. Outside the end of the piling there is a bar with less than 3 ft. water, over which the steam cutter of H.M.S. "Bittern," drawing 3 ft. 6 ins., attempted in vain to pass.

About the middle of the pile work an accumulation of shingle on the western side has partially blocked the channel, but is removed from time to time by the Turks.

Within the piling the water deepens, and it appeared probable that a boat drawing 5 ft. of water might, without any difficulty, enter the backwater, if she was got across the bar. There was, in fact, at the time of our visit, a steam launch belonging to the Turkish Government afloat on the backwater. A very slight fishing barrage or weir extends across the passage immediately below the road bridge at the village of Kutchuk-Tchekmedjé, but it can hardly be termed an obstacle.

There can be no doubt that the bar could be dredged through either by hand scoops or machines, but it is almost equally certain that the artificial channel thus formed would be filled again by the agitation of the water during the first strong breeze. Long jetties would be needed to maintain a depth of even 5 feet for entrance. We therefore consider the passage into the backwater is at present of no utility, and that the labour and cost requisite to render it useful, and to maintain it in a navigable condition would be disproportionate to the object to be gained.

Disused siding.

3. Between the village of Kutchuk-Tchekmedjé and the spit separating the backwater from the sea there is a long temporary embankment, apparently constructed for the purpose of procuring gravel ballasting for the railway. The rails have nearly all been taken up, but might readily be relaid, by which means nearly a mile of siding, which may in certain cases be very requisite, could easily be formed.

Coast near Kutchuk-Tchekmedjé station.

4. Between the entrance to the backwater and Kutchuk-Tchekmedjé station, which is about 400 yards east of it, high ground abuts on the beach; the railway being 40 feet and the hills behind it 70 feet above the sea. There are no suitable places for sidings or store houses. The offing is very shoal, the one-fathom line being from 80 to 100 yards from shore, and the three-fathom line from 600 to 800 yards, at about 30 to 50 yards from shore there is a bank with from 2 to 3 feet on it; there being deeper water inside. This coast is much exposed to the south, and a heavy sea rolls in during southerly winds. We therefore consider this locality entirely unsuited for the construction of jetties, or the establishment of a store depôt.

Coast to east of Kutchuk-Tchekmedjé.

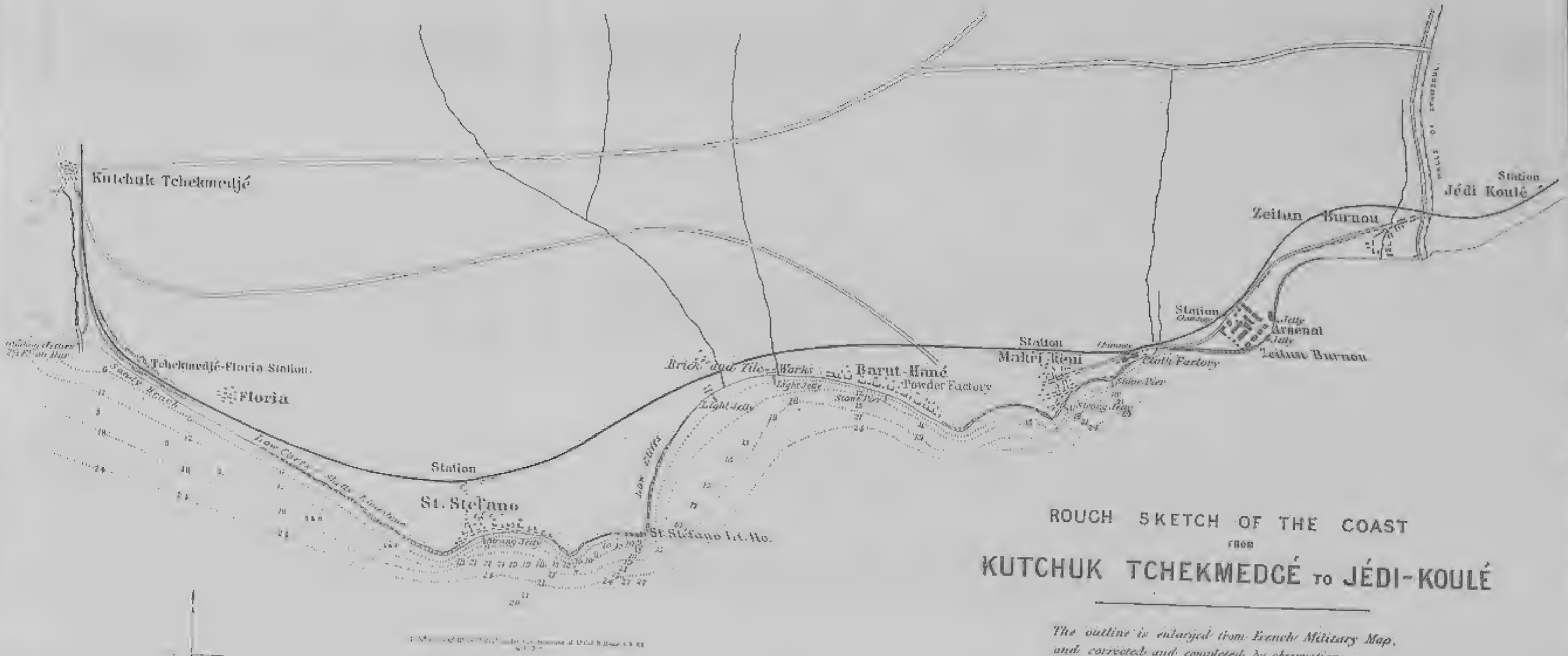
5. The land falls to the eastward of the railway station, and at about a mile from it, near the commencement of the low cliffs, the ground adjacent to the shore is adapted for the construction of sidings, and the erection of stores; but not on a very large scale. The soundings in the offing are—one fathom at 80 yards and four fathoms at 700 yards: bottom and foreshore sand, and bank near shore as before. We therefore cannot recommend this locality.

Cliffs west of St. Stefano.

6. Succeeding the above there extends as far as the village of Stefano, a range of low cliffs 10 ft. to 60 ft. high, formed of a calcareous shelly stratified freestone, resembling the softest variety of Portland stone. The offing is shoal, 3 ft. at 50 yards, and 4 fathoms at 600 yards, the bottom being sand with weed-covered rocks, and the coast quite open to the southward. This position does not appear to be adapted to the requirements of the case.

Bay of St. Stefano.

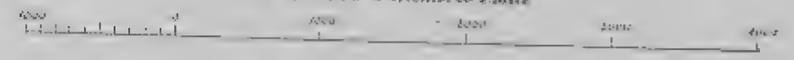
7. We next examined the Bay of St. Stefano, which is about 800 yards wide from point to point, and is bounded by low cliffs of the same character as already described. Two-thirds of the frontage, commencing from the western



ROUGH SKETCH OF THE COAST
FROM
KUTCHUK TCHEKMEDGÉ TO JÉDI-KOULÉ

The outline is enlarged from Franchi Military Map, and corrected and completed by observations. The Soundings are exact but their positions only approximate, the distances being estimated by eye.

Scale of Yards 2 Inches to 1 Mile



H. Ardagh, Capt: R. E.
H. M. S. Helicon
Constantinople
28th Nov: 1876.

side, is built over; and in the middle of the village there is a tolerably solid timber jetty, 100 yards long, and having 9 ft. of water at the end, maintained for the local steamboat traffic with Constantinople. At 180 yards beyond the pier-head, and nearly in a line between the two points bounding the bay, there is a depth of 24 ft. The water is fairly deep near the eastern point: 2 fathoms at 40 yards, 3 fathoms at 100 yards. There is a large open space on the point and to the eastward of it, the cliffs here being about 30 ft. high, but of a soft stone, through which a cutting might be made without difficulty. The great objection to this locality is its exposure—the bay at St. Stefano being merely a hollow in a projecting point. The inhabitants state that the sea breaks on shore with great violence in southerly gales. We cannot therefore advise the selection of this site, although in other respects it is suitable.

Bay west of St. Stefano lighthouse.

8. The bay immediately west of St. Stefano lighthouse is smaller, less hollow, and more exposed than that in which the town is situated; there is a depth of 4 fathoms at 350 yards from shore. We consider it unsuitable, for the same reasons given in the previous section.

Bay of Barut-Hané (or the Powder Factory).

9. From St. Stefano lighthouse the cliffs fall away from 40 ft. to nothing at the head of the bay where there are some brick and tile works, with light timber jetties, with flat marshy ground near. The whole of the eastern side of this bay is covered by the scattered buildings of the Barut-Hané, or Government Powder Factory.

The soundings on the west side are shallow, the three-fathom line ranging about 400 yards from shore. This side is therefore unsuitable for the construction of jetties. Off the powder works the water deepens. There is a rough stone pier, at which six large sailing caiques of 20 to 30 tons were moored when we inspected it. Having fire on board, we did not go alongside in the steam cutter, but the soundings off shore were 12 ft. at 100 yards, 15 ft. at 180 yards, 18 ft. at 250 yards, 21 ft. at 300 yards, and 24 ft. at 400 yards. Much the same soundings were taken about 500 yards east of the pier. This bay is more sheltered than St. Stefano, and although a long pier would be requisite (400 yards), the locality is one of the best among the available sites. The existence of the extensive powder works is, however, we fear, an almost insuperable objection to its selection.

Bay west of Makra-keui.

10. The small bay west of Makra-keui is rocky and exposed. The cliffs are about 30 ft. high, and there is 15 ft. at 200 yards. It does not appear to be in any respect adapted to the object in view.

Makra-keui bay.

11. The point west of Makra-keui is rocky, but there is a depth of 2 fathoms at 100 yards. The frontage of the town extends for about 500 yards north-east from the point, the houses being unusually well built, many of the inhabitants being well to do foreign merchants and men having business in Constantinople. At 200 yards east of the point there is a strong timber steamboat jetty with 11 ft. of water at the end, and 50 yards long. The shore rises 30 ft. at the inner end of the pier, and the ascent to the town is by steps, so that it would be difficult both from the levels and from the number of houses to lay a tramway on to this pier. The soundings in the offing gave 3 fathoms at 170 yards from shore, and 4 fathoms at 350 yards. Beyond the east of the town the cliffs fall away, and at a large building adjoining the western side of the enclosure of an extensive cloth factory with a tall and conspicuous chimney shaft, there is a solid well-built stone pier, with vertical sides of massive masonry, 50 yards long and twelve yards wide, with 10 ft. of water at the end. The soundings off this pier gave:—13 ft. at 10 yards, 15 ft. at 30 yards, 18 ft. at 50 yards, 21 ft. at 200 yards, 24 ft. at 220 yards.

On arriving at this point it became dusk, and we were obliged to discontinue the inspection. We subsequently visited the coast intervening between this point and the walls of Stamboul, but found no suitable locality.

West of the Zeitun Burnu Foundry and Arsenal there are cliffs from 40 ft. to 60 ft. high, falling towards the cloth factory. The offing does not appear suitable for constructing a pier with a tramway in connection with the railway, but the ground being quite open, and of an uniform gentle slope, seems admirably adapted for the erection of large storehouses and the accumulation

of matériel. The frontage of the arsenal, on which there are two jetties, cannot, we conceive, be regarded as available. East of the arsenal the cliffs are higher, and the outskirts of the village of Zeitun Burnu are reached. No open ground is here available for a depôt. East of Zeitun Burnu the walls of Stamboul are arrived at.

12. After considering all the sites, we are satisfied that the stone pier near the cloth factory at Makra-keui, is the point best adapted for the construction of a pier or jetty running out into deep water (4 fathoms). The length of such a structure from the head of the present pier would be under 200 yards.

A store depôt may be formed either immediately north of the pier, and adjacent to the railway, or at a short distance eastward near the arsenal. A part of the enclosure of the cloth factory may be utilized without stopping its operation, and smaller jetties for landing by trans-shipment, may be erected here. There is no difficulty in connecting with the railway.

13. While recommending this site as the best available within the prescribed limits, we feel bound to state, that had it not been the case that certain contingencies might render those limits absolute, we should have hesitated to select as a place for the disembarkation of stores any point upon this exposed coast.

From local information, we have ascertained that in southerly gales the sea breaks in upon the shore with great violence, and that the small piers and jetties along the coast are subject to frequent damage, and even destruction, during the winter season.

We wish to express very strongly our opinion, that a pier constructed at the point we have described will not be exempt from similar damages; and that in any case, there will be in winter many days together during which it will be impossible for a large vessel to lay alongside the pier-head with safety, or even to trans-ship cargo.

In such circumstances the best course to adopt would be for the vessels to discharge at the Stamboul railway station, and send out their stores by rail to the depôt, if the exigencies of the period allowed of such a proceeding.

We have the honour to be,
Your most obedient Servants,

E. C. ANSTRUTHER,
Commander H.M.S. "Bittern."

J. C. ARDAGH,
Captain, R.E.

Lieut.-Colonel Home, C.B., R.E.

Enclosure 6 in No. 5.

REPORT ON THE TURKISH ARSENAL AT ZEITUN BURNU.

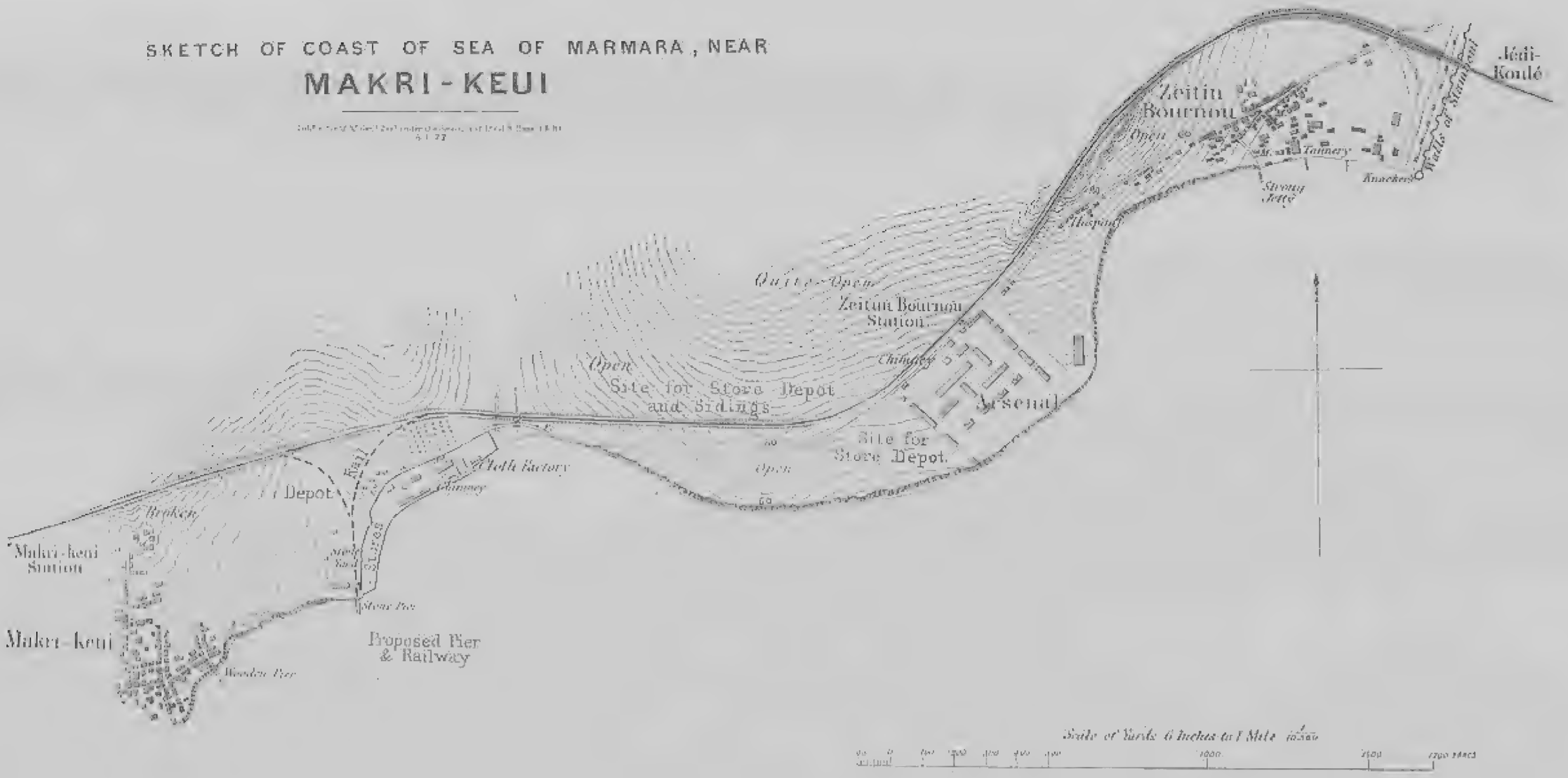
H.M.S. "Helicon,"
Constantinople,
30th November 1876.

SIR,

Having occasion yesterday, when engaged with Commander Anstruther R.N., Commanding H.M.S. "Bittern," to visit the coast at Zeitun Burnu, we took advantage of an offer made by one of the English superintendents employed in the Arsenal to inspect the workshops, Kiamil Pacha the chief of the establishment not being then visible. The works cover a plot of ground about 1¼ mile square, the entrance being exactly opposite the Zeitun Burnu Station.

SKETCH OF COAST OF SEA OF MARMARA, NEAR

MAKRI-KEUI



J. C. Ardagh
Capt. R.E.
29th Novr 1876.

The finished articles constructed there comprise iron gun carriages, for coast, field, and mountain batteries; wheels; all varieties of projectiles for ordnance of every nature, from the mountain gun to the 28 centimetre (11¼ in.) Krupp gun, including chilled shot and shell, common and segment shell, shrapnel, case, and grape; brass cartridge cases for Minié, Snider, and Martini-Henry rifles; swords for all arms of the service, and a variety of small work.

There are upwards of 1,200 men employed, nearly all being enlisted soldiers, who came to the works quite ignorant of any handicraft. They receive as working pay sums ranging from 2 piastres per day (4*d.*) downwards. As a rule they are dismissed at the end of their five years' service; or, if any are retained they are not the best workmen, but those who will labour at the cheapest rate. This system is naturally opposed by the English foremen. The highest class of skilled workmen are civilian Armenians. It does not appear that the handicrafts learned by the conscripts are of any benefit to them afterwards, as they return chiefly to agricultural pursuits, and in the country a shoeingsmith is the only craftsman needed.

The conscripts easily learn machine work, such as the use of lathes, planing and drilling machines, &c., but do not become good fitters.

There are 68 hand forges with steam blast, and 8 steam hammers in one building, 4 large steam hammers up to 2½ tons, with rolls, puddling, welding, and refining furnaces in another. The iron used in the carriages is native charcoal iron of superior quality, supplied in small scantlings, viz., bars about $2\frac{1}{2}'' \times \frac{1}{2}''$. These are welded together and forged out on the premises.

The cheeks of the carriages, instead of being built up with uniform rolled plates and angle irons, as they would be where such articles were in the trade, are solid forgings, and although perhaps more expensive, are very well turned out.

The lead jacketing of the breech-loading projectiles, and the segment and shrapnel shell, seem very well executed. The cartridge cases are made by hand presses. The swords seem of good temper and well turned out.

On the whole, the work done is surprisingly good, considering the class of workmen employed.

The bronze guns, now being constructed in considerable numbers, are cast here, and finished at the Top-Hané in Constantinople.

At various times, coils for guns on the Armstrong construction, and the finishing of the Krupp ring has been done here with success, but has for some time been discontinued. No statistics of the quantity of material manufactured were obtainable, but the arsenal is not working to its full capability, nor are the men working overtime.

I have the honour to be,
Sir,
Your obedient Servant,
J. C. ARDAGH,
Captain R.E.

Lieut.-Col. Home, C.B.

No. 6.

CONSTANTINOPLE,
18*th December* 1876.

Sir,

I HAVE the honour to acknowledge the receipt of your letter dated 6th December 1876, marked "Confidential," enclosing, by order of the Secretary of State for War, certain extracts from papers submitted by you to him.

I have the honour to remark—

1. The report furnished by Major-General Conolly, C.B., now Her Majesty's Military Attaché in Paris, as to the construction of railway carriages in Russia, with axles so adjusted as to run on a 4 ft. 8½ in. or a 5 ft. gauge, was made when that officer was Military Attaché at Vienna. Not having the papers with me, I am unable to say whether or no the carriages were made at

Vienna, but my impression is that they were so made. The difference between the broad and narrow gauge in England was, or is, 2 ft. 3½ in. An alteration to suit so great a difference is manifestly far more difficult than when the difference is only 3½ inches. Granting that English carriage makers and engineers found this difficulty too great, it appears that the Russians have overcome it, as Colonel Mansfield, late Her Majesty's Consul-General at Warsaw, now Her Majesty's Consul-General at Bucharest, to whom I telegraphed, replies that when he left Russia at the beginning of the year there were 200 carriages in existence with these axles.

2. Further, the Polish lines west of the Vistula are on the 4 ft. 8½ in. gauge, and can be run on to Jassy *via* Lemberg, through Gallicia.

3. I have, both officially and privately, drawn the attention of Her Majesty's ambassador to the desirability of destroying not only the Scuiani bridge, but also the Sereth bridge, and to the absolute necessity of destroying the line from Schumla to Rustchuk. But, so far as I can judge, the Turkish military authorities have their own views as to the advisability of taking action in these matters, and, if I may venture to express an opinion, are not desirous of receiving advice, or, at all events, of acting on advice tendered to them, and unsupported by an armed intervention in their favour.

4. So deeply impressed was I of the necessity of destroying the Scuiani and Sereth bridges, that on my arrival in this country I at once took steps to ascertain their nature. The moment an officer is available he will be sent to Bulgaria and Roumania, but at present no officer is available, and, under existing circumstances, such an officer could report only on the present state of defences, number of troops, &c., as I think it extremely unlikely that the Turkish military authorities would afford any information as to their military plans to any one who comes to them simply as a traveller or visitor, and without other official recognition.

I have the honour to be,
Sir,
Your obedient servant,

The Inspector-General of Fortifications,
Horse Guards, War Office.

R. HOME,
Lieut.-Colonel, R.E.

No. 7.

CONSTANTINOPLE,
Sir, *19th December* 1876.

SINCE my arrival in this country the method in which the important works that may have to be constructed for the defence of Constantinople should be carried out has never ceased to exercise my thoughts.

Placed in a peculiar position in this country as a mere traveller, with no official position, and anxious to carry out the work I am engaged on in an unobtrusive manner, and, for many obvious reasons, desirous of remaining in this city as little as possible, I have endeavoured to procure information quietly and from many sources, and by sifting and examining it, comparing the statements of one person with those of another to arrive at correct conclusions. I believe I have, however, obtained information which warrants me in reporting to you on the subject with considerable confidence.

Before doing so, I venture to make a few observations on the Crimean war. The history of that war (not its published history) is most instructive on these matters. That history points distinctly to four things as being the cause of the difficulties and expenses incident on the war.

1. The magnitude of the enterprise was never, in the earlier stages of the war, clearly recognised. A great war was begun with peace establishments at a very low figure.

2. The Government of the day, in the earlier stages, never seemed to know what they really wanted. Their orders were ambiguous, and that

ambiguity was carried through every department of the army, and resulted in half measures,—a desire to do what would suit two distinct lines of policy.

3. When disasters seemed to threaten, there followed an excited, feverish action, striving, by lavish expenditure, to recover lost time and make up for previous parsimony; this expenditure benefitted the army but slightly, while a host of civilians, vice-consuls, and Levantines of all shades, fattened on it.

4. Urged by the Press, and eager to do something, the War Office fell a prey to inventors—amateur soldiers, amateur engineers. The old and tried servants were put to one side, or compelled to carry out the whims and ideas of men whose notions of war were derived from the columns of "our own correspondent."

Reading the mass of papers connected with the Crimean war of a confidential nature that have passed through my hands in my official capacity, I have been perfectly astonished at the extraordinary proposals gravely made in England by these amateurs, and as gravely submitted to the chiefs of the army in the field for report.

Any person who takes the pains to read through the mass of papers connected with the Crimean Railway and Army Works Corps would be both amused and very indignant. It is absolutely requisite, therefore, that the works which may have to be executed here should be viewed as a whole, and carried out on one definite plan.

The object of the Government in carrying out the works and sending a British force here is plain; it is to protect Constantinople against attack, and hold it against all comers. Each portion of the work should therefore be arranged in regular sequence, so that what is wanted first may be completed soonest.

Further, viewing the strain that would be thrown on the mercantile marine by sending 30,000 men complete from England to this place, it is desirable to reduce all demands for freight at such a time; and to make local resources, as far as possible, suffice, bearing in mind that it is far cheaper to pay here the English price of articles, plus a liberal addition for freight, than to throw, at that particular moment, additional strain on the Store and Transport Departments.

I have endeavoured to ascertain, as closely as possible, the resources of this place.

My report (No. 2) gives, I believe a correct though perhaps too low an estimate of their resources, as I have reason to believe that the stocks are larger than there stated.

Of course, at such a time the cost of these articles would rise to famine prices. For this we must be prepared, and must guard against.

A foreign occupation can never be a very popular measure, but I believe that the money that would be received by some 12,000 labourers, and the benefit so conferred on some 60,000 individuals, would tend greatly to popularise it. The people of this country, Turks, Jews, Armenians, Greeks, and Bulgarians, have all a very clear understanding of the value of money.

Further, there is a clear gain of three weeks. Demands for labour, tools, and materials from England could be supplied only after three weeks, if then.

For these reasons I submit that the works which it is requisite to construct should, as far as possible, be constructed by local contractors with local labour, demands on England being limited to as small a number of articles as possible. I have endeavoured to ascertain the character and resources of the various local contractors, their past history, and what works they have executed. In doing this, and in unravelling the extraordinary stories that have been brought to my knowledge, I have been much helped by Mr. Scudamore, C.B., late head of the Postal Telegraph Department in England, now Postmaster-General to the Turkish Government. I find that there are many contractors here, who have all carried out works under the Turkish Government, such as the Ismidt and Smyrna lines of railways, works connected with the dockyards, the new iron bridge across the Golden Horn, palaces for the Sultan, &c. Some of these gentlemen I have met, some I have communicated with indirectly, but one and all expressed their inability to meet the terms, which I consider *a sine qua non*, viz., the deposit in the bank of a sum equal to one-fourth or one-fifth of the amount of the contract to the credit of the British Ambassador, such sum to be

forfeited if the work were not completed on a given day to the satisfaction of the representative of the Secretary of State for War.

I found that most of these gentlemen were really bankrupt. The Turkish Government had either not paid them, or paid them in Turkish bonds or bills, at very long dates, on the revenues of distant provinces. If either of these securities would be accepted, I have no doubt securities for a large amount (nominal) would be forthcoming. As I continued my inquiries, I found that each of these contractors had certain clientelle of followers—foremen and labourers—who come from certain villages or portions of the country; that some could command large amounts of labour, others very little; some had large amounts of plant, others little; that the plant in almost every case was mortgaged by these gentlemen to relieve their more pressing necessities.

The contractors are of all nationalities, but chiefly English.

Seeing so many difficulties in the way, I carefully considered how labour could be procured directly, and how, by means of officers pushed up from Malta, it could be organised. But the delays and difficulties of such a system, the various nationalities and languages to be dealt with, and the ignorance of how and where labour was to be obtained, made it very questionable if these works could be carried out in this way.

I was at this time called on by Mr. Hanson, the banker, in Constantinople, who informed me that his firm would undertake the work, finding the money to deposit to the credit of Her Majesty's Ambassador, and combining the whole resources of the place, provided he were allowed to select his own people to carry out the work.

I told Mr. Hanson that, in case such a proposition was approved of, it would be requisite for him to enter into seven or eight different contracts, each for a definite portion of the work, and that the forfeit-money would have to be fixed at one-fourth to one-fifth of the total amount of each such contract. He appeared disposed to accept these terms. The question of prices to be agreed upon when the work was begun, a schedule prepared, and all fines not fixed to be determined by arbitration.

Mr. Hanson said (what I believe is correct) that by combining the efforts of several contractors, massing their plant and labour, the work could be easily executed in a short time, at a moderate cost.

Mr. Hanson is, I am informed, a man of considerable wealth and well-known integrity; but it would be desirable to make inquiries in England as to his solvency and respectability. If the result of such inquiries is satisfactory, I believe the arrangement will prove so also. I mentioned it to Sir Henry Elliot, who considered it to be highly advantageous to the public service.

We should be relieved from the difficulty incident on selecting contractors. We obtain a solid guarantee for the execution of our work. We obtain possession of all the local resources, and we place between us and the sub-contractors a man of wealth and honesty, with a great local knowledge and a considerable sum at stake in the proper carrying out of the transaction.

Lastly, we deal with the matter in gross, making a homogeneous work of the whole, avoid competition for labour and material, and keep the markets in our own hands.

It is difficult to give an estimate, however approximate, for the cost of these works; but, allowing for materials to be supplied by the Turkish Government, and materials to be supplied from England, I think the total cost, in ordinary times, at an ordinary rate of speed, would be about 50,000*l.* Allowing for extra cost of material, labour, and rapidity of execution, I think the cost of the whole may be put at about 85,000*l.* to 90,000*l.*, a sum of 20,000*l.* or 23,000*l.* being lodged as caution-money in Sir H. Elliot's hands.

Should we be able to carry out these works for the figures named, and in the time named (and I think we can), the saving will be very great, and may be classed as follows:—

1. Saving, by reducing the demand for freight in England.
2. „ by using local resources and men, only too glad to work for a small remuneration.
3. „ in preserving stores from damage.
4. „ in reducing demurrage to a very low figure.
5. „ in reducing establishments of labour, &c., to a very low figure.

In carrying out such work, we must look, not for small savings on particular points, but we must look at the whole as a whole. I never can recommend reducing the outlay on the Engineer Vote, by leaving out store-houses and tramways, when I know well that they would have to be supplied in the end at a cost greater than they could be made for at first, while meantime the Transport and Commissariat Votes would be surcharged with ten times the amount so saved.

I have the honour to be,
Sir,
Your obedient servant,
R. HOME, *Lieut.-Colonel R.E.*

To the Inspector-General of Fortifications.

P.S.—I have just received from Messrs. Hanson & Co. a letter putting their proposals in writing.—R. H.

No. 8.

CONSTANTINOPLE,
22*nd December* 1876.

Sir,

I HAVE the honour to forward the enclosed documents:—

1. The northern half of the survey of the defensive position between the Sea of Marmora and Black Sea.

This, combined with the survey forwarded with my Report No. 1, completes the whole front. I beg that this may be lithographed as soon as possible, and copies of the complete plan forwarded. I regret I am unable to forward a tracing showing both portions of the survey, with the sites of the redoubts marked. Every effort and every exertion has been made to obtain such a tracing, but, as the whole sketch had to be prepared in duplicate, I found it perfectly impossible to get a tripliate copy prepared in the time. A slip of tracing-cloth, which fits on the plan, is enclosed; this will at once allow the actual sites of the redoubts to be recognized.

2. Complete details of the whole of the redoubts and other defensive works which it is proposed to construct prior to the arrival of the troops.

These details embrace—

Plans of the redoubts.
Sections of the redoubts.
A description of each work, with full details as to bearings, &c., to allow it to be taken up by even a person who had never been on the ground previously.
An Armament Return, showing the proposed armament of each work.
A return of the materials required for each work.

The armament has been limited to the guns—viz., twenty 7-in. B.L.R. and sixty 40-pr. B.L.R., which you inform me are ready for this purpose. I submit, however, a very strong recommendation that the armament should be increased by twenty 20-pr. B.L.R. and twenty Gatling guns.

3. A Report on the whole position, marked .. .. .. A
4. „ Store Depôts, „ C
5. „ Communication, „ .. .. .. B
6. „ Telegraphs, „ .. .. .. D
7. „ Quartering the troops „ .. .. .. E
8. „ The position occupied by the enemy, and an examination of the lines from his point of view, marked .. .. F
9. „ A Memorandum of Stores required from England, marked .. .. G

A separate letter and Report on the Russian carriages with telescopic axles; on the best means of executing the lines; and on the tramway proposed to be made from Jaserin railway terminus to No. XIII. Redoubt, all accompany this document in separate covers.

I must apologise for the roughness of many of these documents. Time has been wanting to prepare fair copies, and in most cases the original, or first draft is sent home. I believe the roughness is only in appearance, and that the plans and the information they convey are perfectly reliable. As no copies have been retained of many of these documents, may I request to be furnished with copies. I have felt deeply the responsibility laid on me in the preparation of these documents; and I have endeavoured, so far as my ability went, to enable you to lay before His Royal Highness as complete a document as possible, and one on which His Royal Highness may be able to form his opinion without much trouble. If I have failed in doing so, I can only urge that the time was very short, and some of the difficulties very great, and that many of the questions required care, study, and thought before they could be dealt with.

I respectfully beg that you will bring to His Royal Highness's favourable notice the exertions of the Officers who have been engaged on this duty.

Captain Ardagh has inspected the Dardanelles and Bosphorus. Complete reports on these are ready, and, as soon as they can be copied, will be sent. Reports on the Adrianople line of railway, the Tirnova-Kaslink Pass, and on many other points are also ready and will be forwarded. Captain Ardagh's health has suffered. As he is now employed by the Marquis of Salisbury, a portion of his work must be detained.

Captain Fraser's ability and his powers of work are well known to you. His report on the redoubts speaks for itself. I have to thank him for the unwearying energy he has displayed in getting the plans prepared. You, sir, can judge of their ability far better than I can.

Lieutenants Cockburn and Chermside have had a most difficult and laborious task to perform, sketching a large extent of very complicated ground covered with bush, in very bad weather. Their sketches were torn, wetted, and blurred; many portions of the work had consequently to be done twice over. On one occasion, when rain stopped their work for several days, I found them sketching with a 66-foot chain, which they had to drag themselves through heavy ploughed land. To these officers and to Captain Fraser is due the fact that the work goes home so soon, and with an accuracy I at one time despaired of.

We have all felt that if a British army came to this country much depended on our work, and we have endeavoured to make it as reliable as possible.

I have the honour to be,
Sir,
Your obedient servant,
R. HOME,
Lieut.-Colonel R.E.

To the Inspector-General of Fortifications.

Inclosure 1 in No. 8.

MEMORANDUM ON THE WORKS OF DEFENCE PROPOSED FOR THE POSITION BUYUK-CHECKMEJEH—DERKOS.*

By Captain T. FRASER, R.E.

22nd December, 1876.

Armament Return of the disposition of 20—7-in. B.L.R., and 60—40-pr. B.L.R. Guns in the Works of Defence in the line Buyuk-Checkmejeh—Derkos.

	Redoubt.	No.	7-in. B.L.R.	40-pr. B.L.R.	Garrison.
Left.	South Vineyard Redoubt ..	I. (*a*)	4	..	15,000
	Buyuk „	I. (*b*)	..	2	
	Keep „	I. (*c*)	3	..	
	Eskidehi „	II. (*b*)	..	4	
	Baghtchasish „	III. (*a*)	..	3	
	Railway „	III. (*b*)	4	2	
Centre.	Eagle „	IV.	..	3	20,000
	Tozaluk-Tchiftlik „ ..	V. (*a*)	3	..	
		V. (*b*)	..	2	
		V. (*c*)	..	2	
	Bábamakosh „	VI. (*a*)	..	4	
	North Vineyard „	VII.	..	6	
	.. ..	VIII. (*a*)	2	..	
	.. ..	VIII. (*b*)	2	..	
	.. ..	VIII. (*c*)	..	2	
	.. ..	VIII. (*d*)	..	2	
Right.	Urzuulu „	IX. (*a*)	2	4	18,000
	Treo „ ..	X. (*a*)	..	4	
		X. (*b*)	..	2	
	.. ..	XI. (*a*)	..	4	
	.. ..	XII. (*a*)	..	4	
	.. ..	XII. (*c*)	..	2	
	.. ..	XII. (*d*)	..	2	
	.. ..	XIII. (*b*)	..	4	
	.. ..	XIII. (*c*)	..	2	
	Isthmus between Lake Derkos and Sea	..	..	..	2,000
			20	60	55,000

* A general plan, showing the positions of the works, and detailed sketches, accompany this Report.

General Remarks.

The sites which, for tactical reasons, it is desirable to occupy with works in the Buyuk-Checkmejeh position are of two kinds. They are either situated on the sides of slopes or on plateaux of heights. In the former case a few natural terraces, such as that on which No. 1 (*c*.) stands, are available, but generally the rise to the rear is such that the defilade of the interior by the parapets of the faces would require an extraordinary height for the latter. Instead of this it has been found simpler to protect the gorge with a parados, and so avoid the cramping of the work, in order to make it possible to defilade it completely. For works on level plateaux with considerable commands, high parapets are unnecessary, while, in cases where there is a conical rise in the plateau round which the work has to be traced, this rise has been turned to account as a parados, instead of attempting to raise the parapets above its level.

In laying out the works the relative levels of the lines of parapet have been taken, and the heights of each portion of the parapets will be regulated accordingly; but in the accompanying rough sketches only the mean sections have been given. These profiles are small, but provision is made for enlarging them should time permit.

It is submitted, however, that the value of the works will depend less on the size of their sections than on the manner in which they are furnished with efficient obstacles on the foreground; with blinded cover for their garrisons while under artillery fire; with secure magazines, and in some cases with screens for their guns; with good revetments for the parapets, steps, &c., and with proper drainage for the trenches and passages; and that the labour and time necessary to secure these will be so considerable that, in the first instance at least, it is well to begin on a moderate scale.

Obstacles.

On the southern half of the position, where there is no timber, wire entanglements, and pointed stakes, with small quantities of fraises, will be chiefly used. To the north, abatis and entanglements of brushwood will be largely employed.

Blindages.

The blinded cover proposed consists either of a casemate under the banquette or of a hollow traverse. The arrangements of the magazines and screens are indicated for I (*a*) and I (*b*).

Revetments.

The revetments will, in nearly all cases, be of hurdle work, which the people of the country understand.

One half of the position is wooded, and brushwood for redoubts (II. to V.) can be brought up to Baghtcha-ish by railway from beyond Tchataldja, whence arabas can transport it to the works. The rest of the works to the north can be supplied from the nearest woods.

Drainage

The soil generally holds so much water, except in the few cases where there is rock near the surface, that in most cases wooden trough drains must be laid from the lowest points in the trenches to the ditches outside.

Nos. I. (*a*), I. (*b*), *and* I. (*c*).—*Buyuk-Checkmejeh Position.*

No. I. (*a*). South Vineyard Redoubt.

It is proposed to fortify this position with a view to prevent the passage of the great bridge on the Adrianople-Constantinople road, and of the narrow harbour's mouth alongside it.

Redoubt I. (*a*.) stands in a vineyard, and is about 1,800 yards east of the E end of the bridge. Its armament is to be 4—7-inch B.L.R. guns, and it is placed to command the bridge and harbour mouth. It is also valuable as an infantry redoubt, to command the low ground between it and the village. Its front is perfectly flanked by No. 1. (*b*.), the left face of which it flanks in turn, and it is further seen into by 1. (*c*.), whence, however, musketry fire only can be brought to bear upon it. The fruit trees in the vineyard will, when required, furnish a good abatis for closing the gorge of this work.

No. 1. (*b*). Bujuk Redoubt.

Bujuk Redoubt I. (*b*.) is placed at about 1,350 yards N.E. of the eastern extremity of the bridge on the most advanced spur in that direction. It commands the north side of the bridge, and the low ground to the west of it, by the fire of its front A B. The small face, B C, commands the village and the debouch from it. The left flank, C D, the prolongation of which falls on sea, flanks the front of the Vineyard redoubt. The right of the work shoots along the eastern shores of the backwater.

To flank the dead ground below the front of the redoubt at the foot of the small cliff and the right of the village, two or three field gun emplacements and a line of shelter trenches should be formed, just below the N. end of the graveyard and nearly at the water's level.

Along the N., S., and W. boundaries of the village, which contains about 300 houses, are a number of good stone buildings and enclosures, the former with tiled roofs, well adapted for defence, provided a large clearing be made of the wooden upper stories of the neighbouring houses. To the left of the village a line of advanced shelter trenches should run to the sea, so as to command the entrance to the harbour. Where a passage might be attempted these should be supplemented by gun pits for field guns. There is, in addition, a good field artillery position abreast of the Vineyard redoubt, and on the N. side of the great road, whence the whole length of the bridge can be enfiladed.

Bridge Vessels.

It is presumed the bridge will have several arches prepared for demolition by lodging double charges over the haunches.

No. I. (*c*). Keep Redoubt.

The work No. 1 (*c*), about 2,500 yards E. of the E. end of the bridge, is placed on a plateau which completely commands the whole of the ground between it and the bridge, and sees into both the works I. (*a*) and I. (*b*), the latter with its guns, with a depression of 4°.

Arming the works.

All these works, I. (*a*), I. (*b*), and I. (*c*), can be armed from the great road without difficulty.

Soil. Drainage.

The soil in all three cases appears light and easy, but requires drainage.

Water supply.

There is a good fountain close to the right flank of I. (*a*).

Revetments.

Board revetments must be used as it is easier to get these from Constantinople than to obtain brushwood. If Kalikratia be abandoned and destroyed beforehand, it would supply all that is required.

Obstacles.

These will be chiefly wire entanglements, the vine stakes being used before I. (*a*).

II. (*a*), and II. (*b*).

Nos. II. (*a*) and II. (*b*).—*Esskidshi-Tchiftlik Redoubts.*

These works are situated on a height a little N. of the farm, and facing the head of the backwater. Object: to oppose an attempt to pass round the head of the backwater, in order to advance on Bujuk, and also to hinder an attempt to pass between them and the works at Baghtcha-ish.

The hill, like most of those on the position, has a minimum slope at the top; so it was necessary to place the works some distance down.

To flank the front of A C, a small infantry emplacement is formed in a hollow in front of B C, where it is covered from the front.

Arming.

The guns can best be brought up by the track from the railways at Baghtcha-ish to the farm, and thence along a ridge to the top.

If water transport be available from Bujuk, this would be even easier though the landing would give a little trouble.

Water supply.

From the farm; tanks in the works.

Revetments.

Hurdle work at the farm. Any additional supplies from the railway.

Obstacles.

Wire, and deep ditches filled with water to the front and right.

The farm-house makes a good defensible post, and provides accommodation for most of the garrison.

III. (*a*); and III. (*b*).

Nos. III. (*a*) and (III.) (*b*).—*Railway and Baghtcha-ish Redoubts.*

Owing to the importance of the railway itself, and also as it is the second best road to Constantinople, an attack by the (wooden) railway bridge in front of Baghtcha-ish and the two stone bridges just S. of it, seems very probable.

The ground favours defence. The slopes to the front are easy; the command is enough to see nearly all the foreground.

III. (*b*). No. III. (*b*) is about 1,800 yards from the railway bridge, and the shoulder B is 120 yards from the line.

The work is arranged to flank the fronts of III. (*a*) and of IV., and to command all the ground (with a slight exception) to its front, and it is flanked in its turn by III. (*a*) and by IV.

There is a good artillery position before a dip in the ground, some 300 yards to the right front of III. (*b*); the dip gives concealment.

The railway just before the face B C (at C on diagram) has about 80 yards of low embankment forming a breastwork, and the S. border of the cutting in rear can be occupied by a shooting trench. If a blinded gun or mitrailleur wagon be available, it could be worked in and out of the cutting.

III (*a*). No. III. (*a*) is placed at about 2,600 yards N. of redoubts II. (*a*) and (*b*), and 1,600 yards S. of III. (*b*). This work, with a shooting trench S. of its left flank, sweeps the whole of the ground from the railway to the foot of the hill on which are II. (*a*) and (*b*), and entirely commands the road bridges S. of the railway bridge and the village of Baghtcha-ish.

The embankment at B commands that at A, but the front of the latter should be flanked by an outwork (blinded if possible) at the culvert to let it communicate with the rear, while the bank would be held by skirmishers.

Between Baghtcha-ish and the railway bridge is a low meadow not seen into from the forts, which must be commanded by occupying the boundaries (earth banks) of the village, which consists only of wattled huts.

Arming the works. Guns brought up by railway.

Soil. Easy.

Drainage. Required in parts.

Revetments. Hurdle work. Brushwood from beyond Tchataldje by train.

Obstacles. Chiefly wire entanglements.

Eagle Redoubt (IV.) No. IV.—*Eagle Redoubt.*

This work, about 1,900 yards N. of III. (*b*), stands on a ridge separating the valley running N.E. from III. (*b*), from that running E. from behind V (*a*).

Armament. Guns brought to rear of the Tozalak position, and thence along the ridge of the spur in which IV. stands.

Soil. Seems easy; perhaps rocky below.

Drainage. Required.

Revetments. As per III. (*a*) and (*b*).

Obstacles. Chiefly wire entanglements.

Water. None on site, but streams at hand in both the valleys, whence it can be found carried up.

No. V. (*a*) to (*e*).—*Tozalak-Tchiftlik Redoubts.*

V. (*a*). The position above Tozalak Farm is valuable, because from the left flank of V. (*a*) the whole position southward to Bujuk can be seen more or less, and the extensive ridge running S.W. from V. (*a*) is swept along its length by that work.

To secure this command to the left, the works have been placed higher up the slopes above the farm than is otherwise desirable, but, as the general slope does not exceed 5°, the whole foreground can be swept by both arms.

V (*c*). The right work, V. (*c*), commands the works VI. (*a* and *b*), and the valley between them and it, and looks up the main valley as far at least as Urzuulu.

The works are astride the track from the farm to Hadem Keui on the railway, whence the guns would be brought up. They are a little in

front of a saddle-back, whence two valleys run, one N., the other S., which can easily be defended by field guns.

The works are commanded by high ground 600 to 700 yards in rear of them.

The soil, with a sub-soil of white marl on the sites, is covered with flat stones, useful for unexposed parts of revetments; for the remainder, hurdle work from the farm or from the railway at III. (*a*). Soil. Revetments.

Entanglements, and deep water ditches in the marshy ground below. Obstacles.

To be stored from a fountain near the farm. Water supply.

Board troughs required, stone drains also. Drainage.

The scheme of defence must include the placing of the farm in a state of preparation, and the formation of an infantry work on the spur N. of the farm, where also a few field guns should be placed to flank the front of VI. (*b*). The work should be closed, to be safer against night attacks. It is looked into by the redoubts.

Nos. VI. (*a*) and (*b*).—*Babanakash Redoubts.* VI. (*a*).

The main work, VI. (*a*), is about 1,200 yards from the W. end of the ridge.

As the site is level, the parapets between D, and E, if made 9 ft. to 10 ft. high, will defilade the interior. This is desirable, as the work is somewhat commanded.

750 yards to the front a field-work is placed, with low parapets, to be seen over by VI. (*a*), and to be available also for field guns, which may be concealed in the hollow to the north. VI. (*b*).

The extreme toe of the spur is so exposed, that a shelter trench could hardly be occupied there under the preliminary artillery fire of the attack, but cover trenches in the hollow would protect a detachment to man the trench for the close attack, and for the defence of the obstacle in front.

It is proposed to bring a tramway towards Babanakash, whence the guns must come up along the Babanakash ridge. Arming the works.

A small amount will suffice. Drainage.

Dry, and seems easy. Soil.

From a well at Q, or from the streams on each side in rear. Water supply.

Hurdle work; brushwood from Kissiljaly Hill, by arabas. Revetments.

Wire, and wet ditches in the valleys. Obstacles.

The Babanakash Spur is flanked by VII. at 2,600 yards and by the outwork at Tozalak, at about 1,600 yards.

No. VII.—*North Vineyard Redoubt.*

Owing to the considerable cover given by low hills, which rise W. of the main stream, and face VII. at 1,800 yards, the attack can approach this work under favourable circumstances. VII.

The work, therefore, requires plenty of bombproof cover and a number of traverses.

The materials for these (timber, &c.) must be brought up from Constantinople.

The front of VII. is defended directly by musketry fire down to the bridge and stream, and is flanked by VI. (*a*) and (*b*) at 2,600 to 2,400 yards, while the whole work and its foreground is commanded at about 1,800 yards by VIII., firing with a depression of about 2°.

The bridge in front (6 ft. to 8 ft. span) should be removed and replaced by a temporary bridge of logs easily removeable at short notice; the stream is not fordable at this season (December).

Arming the works. A tramway is proposed to VIII., and at a point some 1,000 yards short of VIII. a track descends by which the guns can be got to VII.

Soil. Easy and fairly dry.

Drainage. Troughs required.

Water supply. None is found on the site. Tanks must be used, and filled from a fountain near at hand.

Revetments. Brushwood from Kissiljaly Hill.

Obstacles. Abatis and entanglements of wire.

No. VIII. (*a*) and (*b*).

VIII. (*a*) & (*b*). The sites of these are chosen because they look down the reverse slopes, distant 2,500 to 3,000 yards, behind which an enemy can advance against VII.

Soil. Rocky.

Water. None. Must be stored and brought from the direction of Jaserin by tramway, or from Babanakash in skins.

Revetments. Brushwood, from Kissiljaly.

Obstacles. Scarps and entanglements.

Armament. Guns brought up along the ridge from the railway at Jaserin, by tramway if available.

No. VIII. (*c*) and (*d*).

VIII.(*c*)&(*d*) These are on lower sites, and, with IX., close the great valley running to Kissiljaly.

Remarks as for VIII. (*a*) and (*b*).

Brushwood begins close to VIII. (*d*).

No. IX. (*a*) and (*b*).—*Urzunlu Redoubts.*

IX. (*a*) & (*b*). These works command the fork of the two valleys, and look down on all the undulations before Urzunlu.

Below them the outskirts of the village can be held in advance.

Soil. Rock 18 in. to 2 ft. below the surface.

Drainage. Rubble stone and troughs.

Revetments. From this point N., brushwood is on the spot, or at hand.

Water. To be brought up from Urzunlu, unless, as is likely, wells along the ridge can be formed in the watercourses.

Obstacles. Abatis, wire, and brushwood entanglements.

Armament. From tramway near XIII. (*b*).

Clearings. Near IX., and about all the works except X. a large amount of clearing is required, and the obstacles are the same as for IX.

No. X.—*Tree Redoubt.*

X.

Armament. From the ridge between XIII. (*b*) and IX.

Soil. Easy.

Drainage. Troughs.

Water supply. None on site, but can be got near at hand.

The site of X. is clear all round.

A small Infantry entrenchment is required on the hill or bump on the spur on which X. stands, and between it and the main ridge running from IX. to XIII.; and one other where the spur of X. runs into that ridge.

The bridge in front (6 ft. to 8 ft. span) should be removed and replaced by a temporary bridge of logs easily removeable at short notice; the stream is not fordable at this season (December).

Arming the works. A tramway is proposed to VIII., and at a point some 1,000 yards short of VIII. a track descends by which the guns can be got to VII.

Soil. Easy and fairly dry.

Drainage. Troughs required.

Water supply. None is found on the site. Tanks must be used, and filled from a fountain near at hand.

Revetments. Brushwood from Kissiljaly Hill.

Obstacles. Abatis and entanglements of wire.

No. VIII. (*a*) and (*b*).

VIII. (*a*) & (*b*). The sites of these are chosen because they look down the reverse slopes, distant 2,500 to 3,000 yards, behind which an enemy can advance against VII.

Soil. Rocky.

Water. None. Must be stored and brought from the direction of Jaserin by tramway, or from Babanakash in skins.

Revetments. Brushwood, from Kissiljaly.

Obstacles. Scarps and entanglements.

Armament. Guns brought up along the ridge from the railway at Jaserin, by tramway if available.

No. VIII. (*c*) and (*d*).

VIII.(*c*)&(*d*). These are on lower sites, and, with IX., close the great valley running to Kissiljaly.

Remarks as for VIII. (*a*) and (*b*).

Brushwood begins close to VIII. (*d*).

No. IX. (*a*) and (*b*).—*Urzaulu Redoubts.*

IX. (*a*) & (*b*). These works command the fork of the two valleys, and look down on all the undulations before Urzaulu.

Below them the outskirts of the village can be held in advance.

Soil. Rock 18 in. to 2 ft. below the surface.

Drainage. Rubble stone and troughs.

Revetments. From this point N., brushwood is on the spot, or at hand.

Water. To be brought up from Urzaulu, unless, as is likely, wells along the ridge can be formed in the watercourses.

Obstacles. Abatis, wire, and brushwood entanglements.

Armament. From tramway near XIII. (*b*).

Clearings. Near IX., and about all the works except X. a large amount of clearing is required, and the obstacles are the same as for IX.

No. X.—*Tree Redoubt.*

X. Armament. From the ridge between XIII. (*b*) and IX.

Soil. Easy.

Drainage. Troughs.

Water supply. None on site, but can be got near at hand.

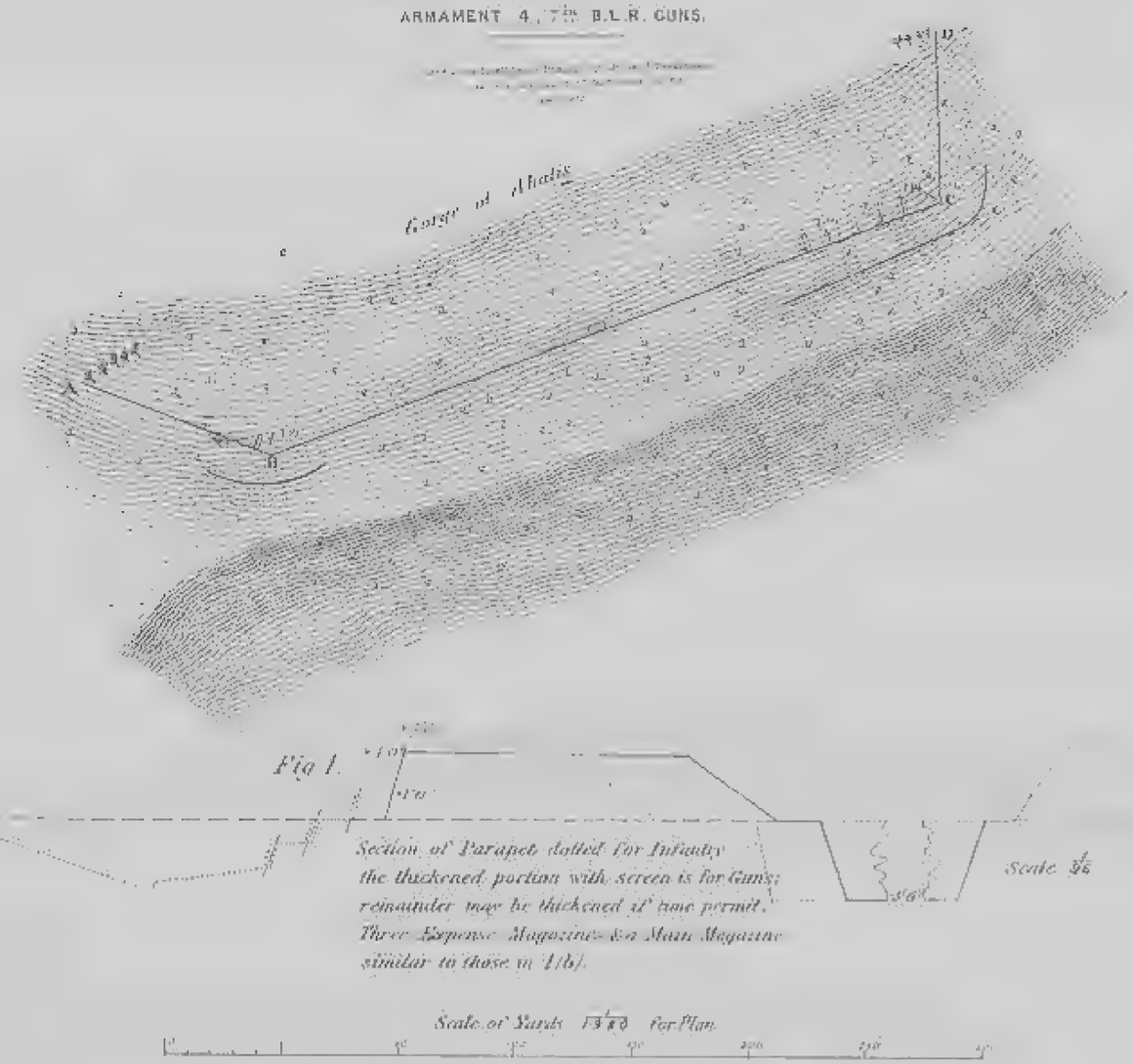
The site of X. is clear all round.

A small Infantry entrenchment is required on the hill or bump on the spur on which X. stands, and between it and the main ridge running from IX. to XIII.; and one other where the spur of X. runs into that ridge.

1(a)

South Vineyard Redoubt.

ARMAMENT 4, 7th B.L.R. GUNS.



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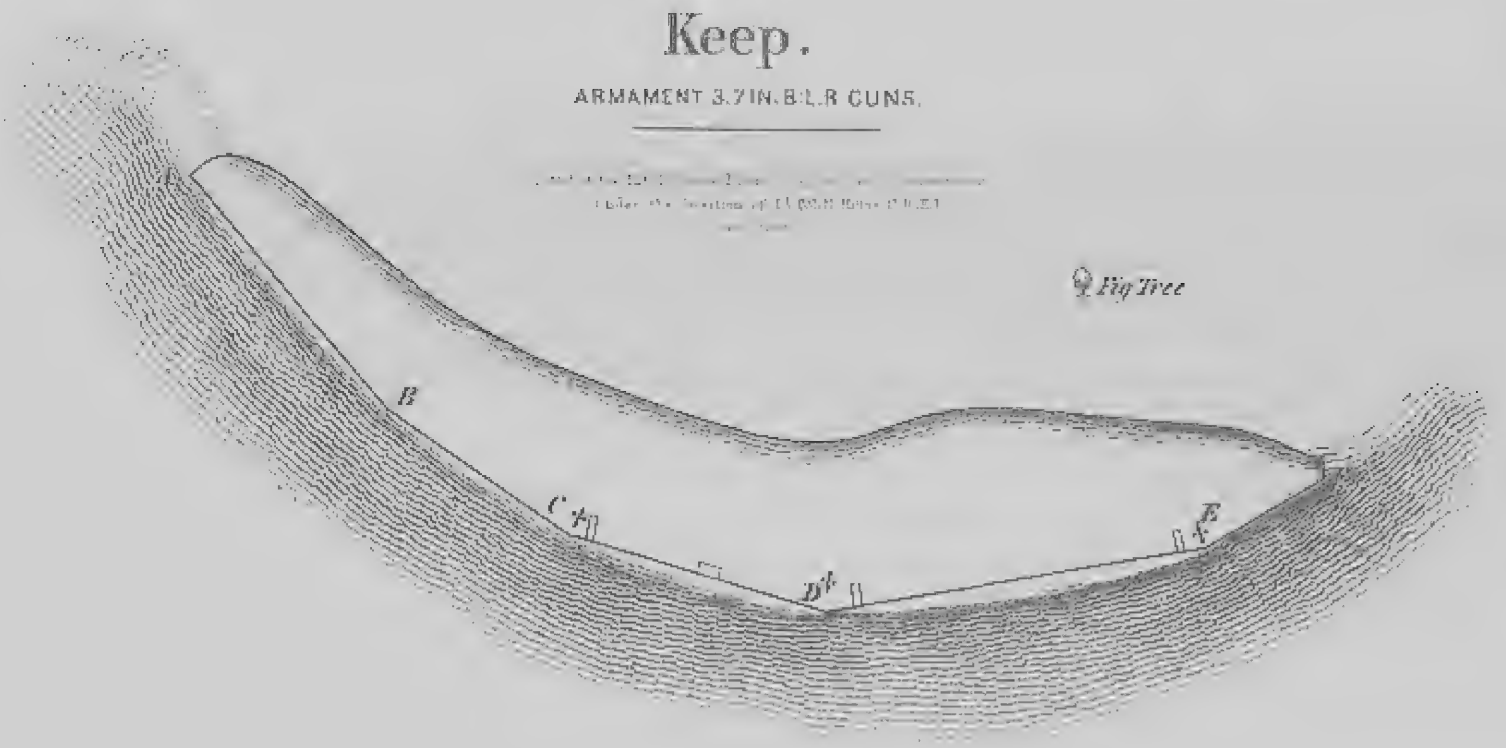
I(c)

Keep.

ARMAMENT 3.7IN. B.L.R GUNS.



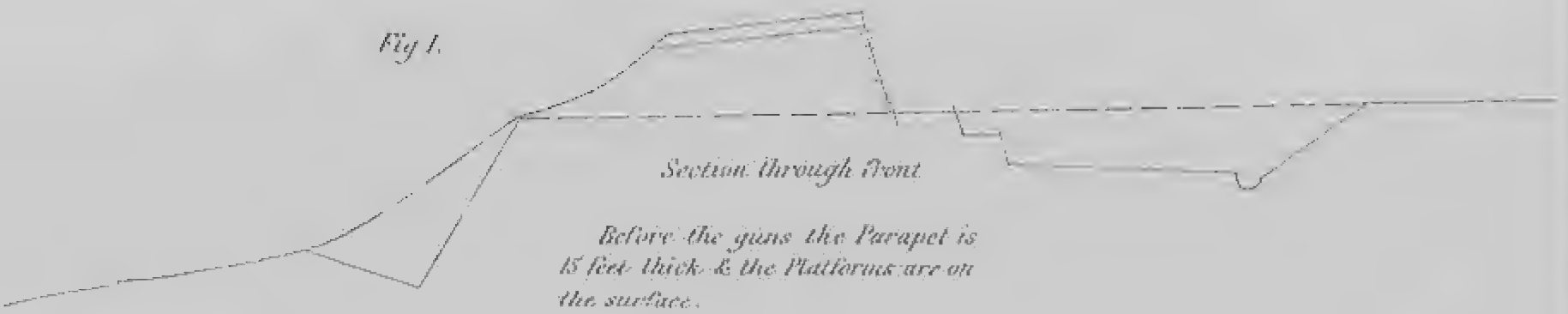
Depression to I(a) 7°. To I(b) 4°. To entrance to harbour 2°.

Scale of Yards 1/1980

50 0 50 100 150 200 250 300

Scale for Sections 1/96

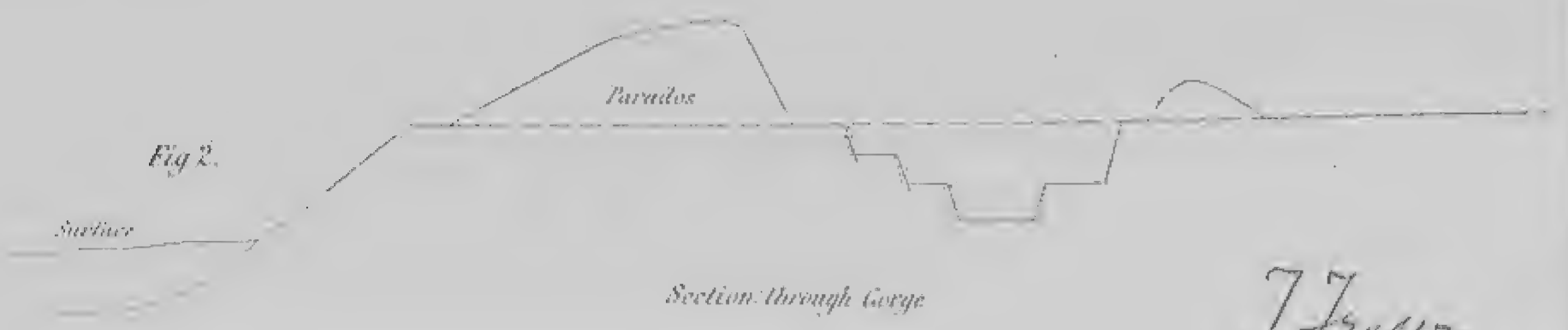
Fig 1.



Section through Front

Before the guns the Parapet is 15 feet thick & the Platforms are on the surface.

Fig 2.



Section through Gorge

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1 (b)

Bujuk Redoubt

ARMAMENT 2, 40 Pr. B.L.R.

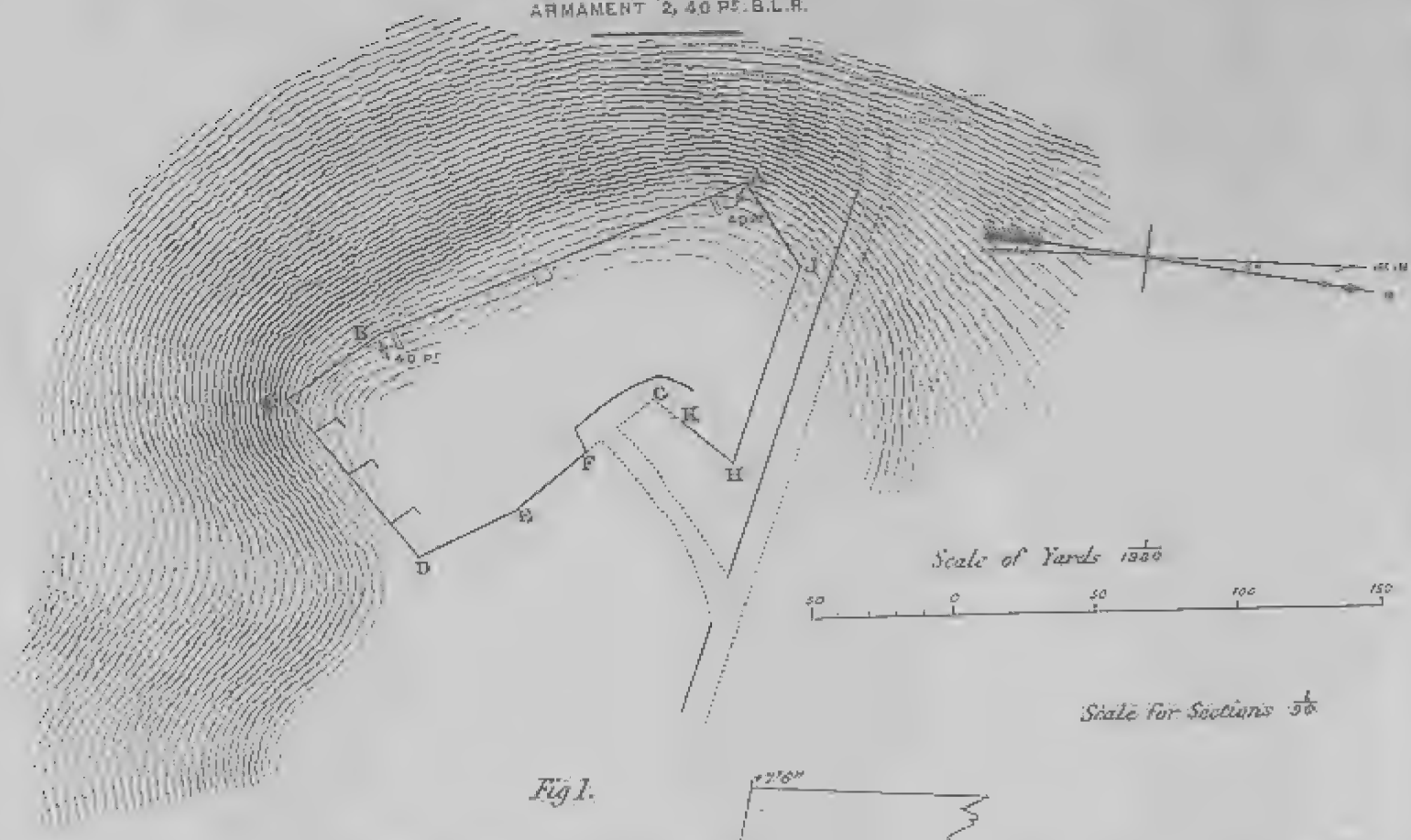


Fig 1.

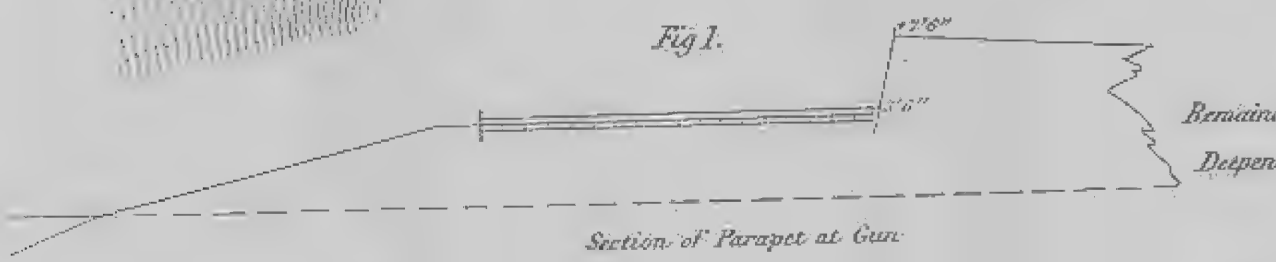


Fig 2.

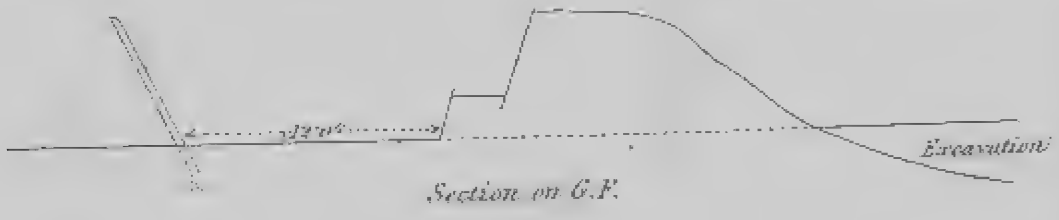
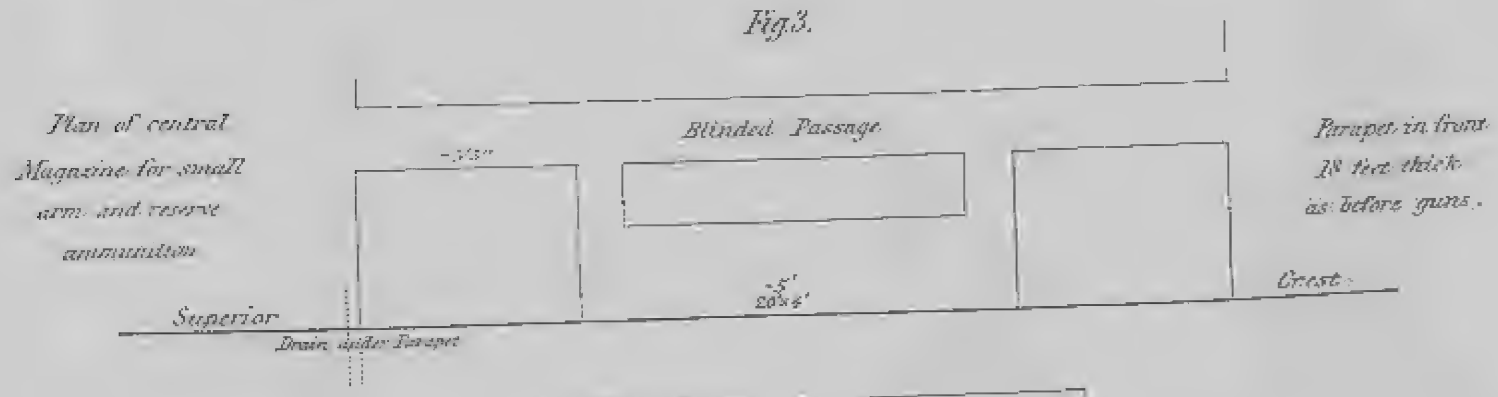


Fig 3.



Plan of Expense Magazine for 2 guns.

Fig 4.

Excavations 3' deep on each side of Gun platform with ramp to blinded passage for detachments.

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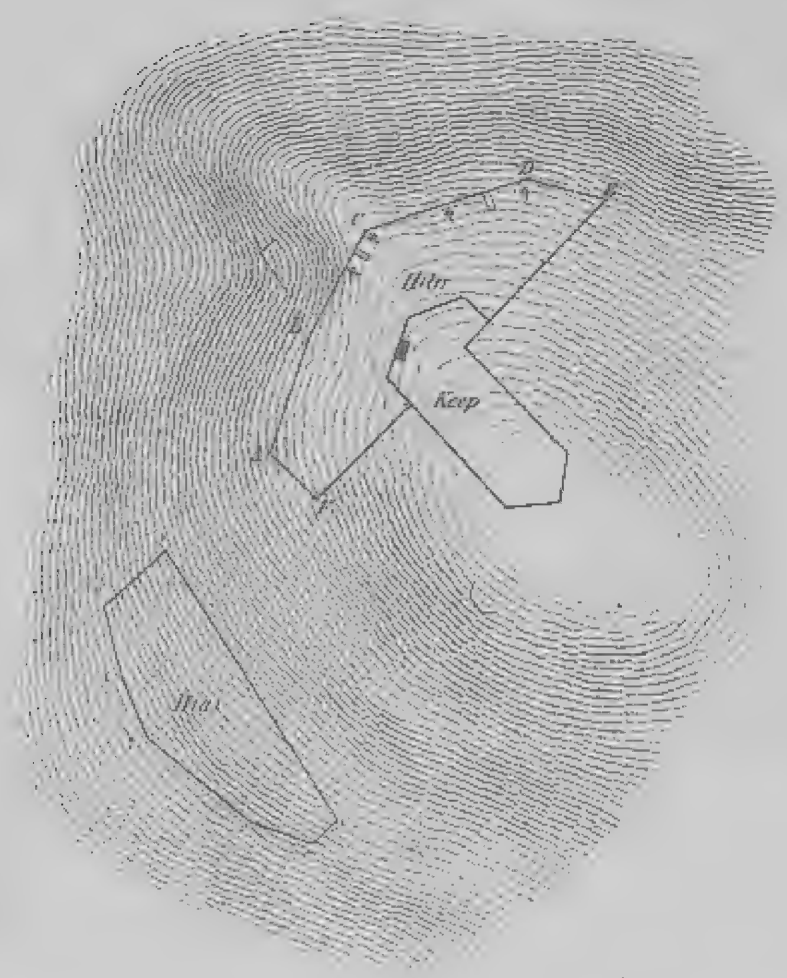
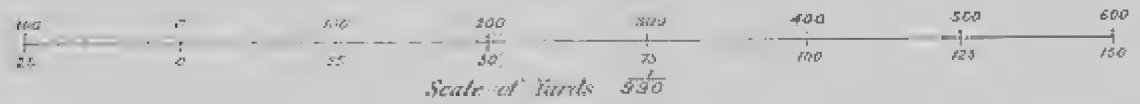
II (a & b)

Esskidshi Tchiftlik.

ARMAMENT 4.40 Pr B.L.R. GUNS.



Scale of Yards $\frac{1}{3960}$



Scale of Yards $\frac{1}{990}$

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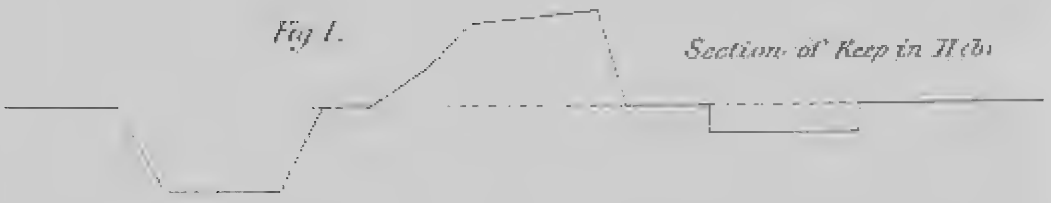
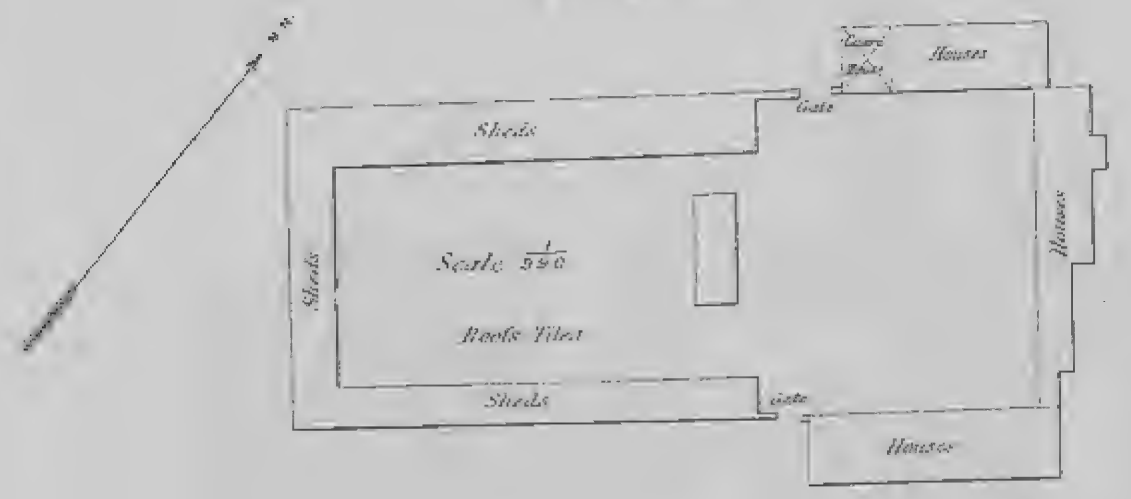
Two magazines similar to Fig 4 of I (b)
Parapets of II (b) same as Fig 1 of I (a) but gorge same as Section 4 of VII.
Magazine in Keep as in Fig 3 of I (b)

Fig 1.



Section of Keep in II (b)

The Tchiftlik



Walls rubblestone about 9 ft high & 18 ins thick.
Horizontal courses of Timber in walls 4'6" above ground where loopholes can be made.
400 yds of hurdle fencing round farm available for Redoubt.

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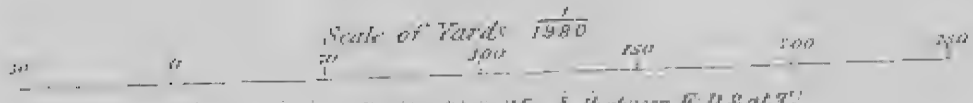
III (b)

Railway Redoubt.

ARMAMENT 3.7 in. AND 3.40 PTS

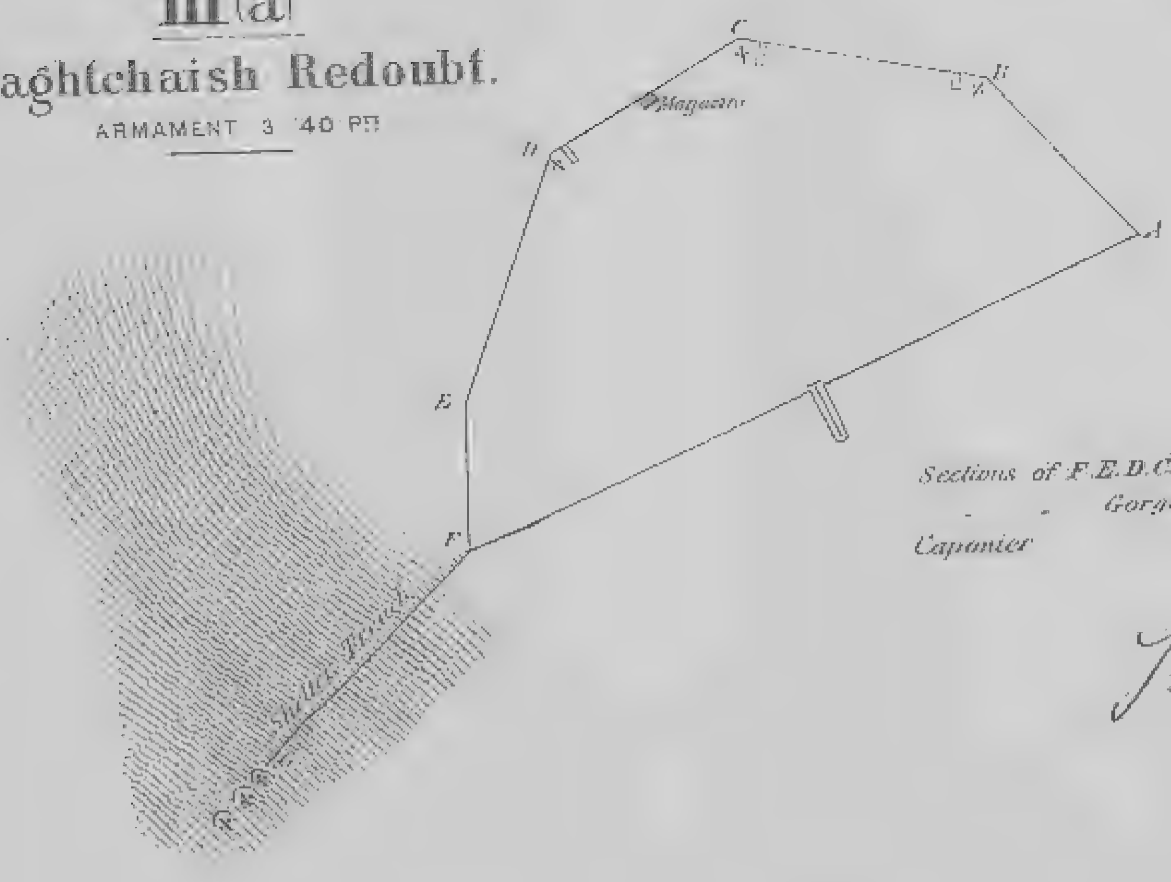


Two Reserve Ammunition Mag^s (between E.D & at T)
Four Expense Magazines similar to Fig 4 of I (b).
Parapets J.H.G.F.E. C.B same as Section I of VII.
Remainder B to J same as Section 4 of VII.

III (a)

Baghtchaish Redoubt.

ARMAMENT 3 40 PTS



Sections of F.E.D.C.B.A same as Fig I of I (a).
" " Gorge " " Fig 2 of I (c).
Caponier " " Fig I of IV.

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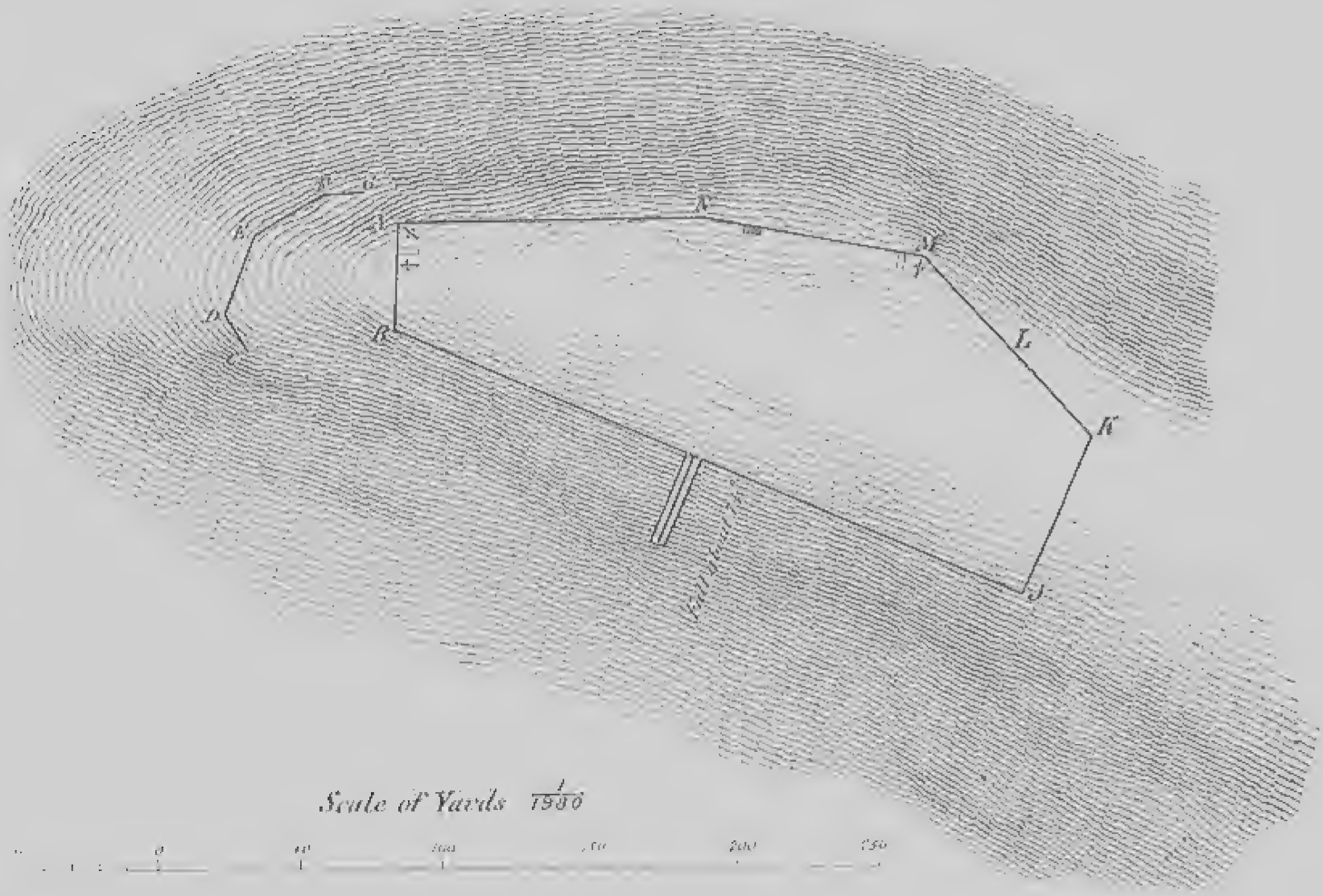
IV.

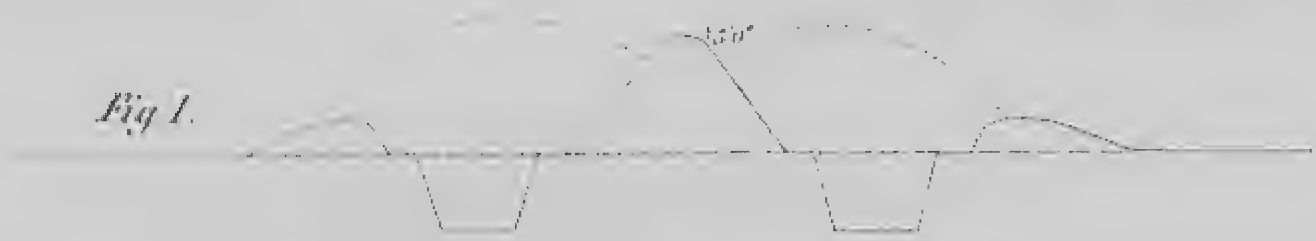
Eagle Redoubt

ARMAMENT 3.40 PRS



Scale of Yards $\frac{1}{1980}$

Fig 1.



Double Planking trench ends Traverses.

Parapets except B.J. Same as Section Fig 1 of 1(c)
The Section of the Outwork C.D.E.F.G is the same
except that its parapet is only 6 ft thick.
Section of B.J. Same as Fig 2 of 1(c)

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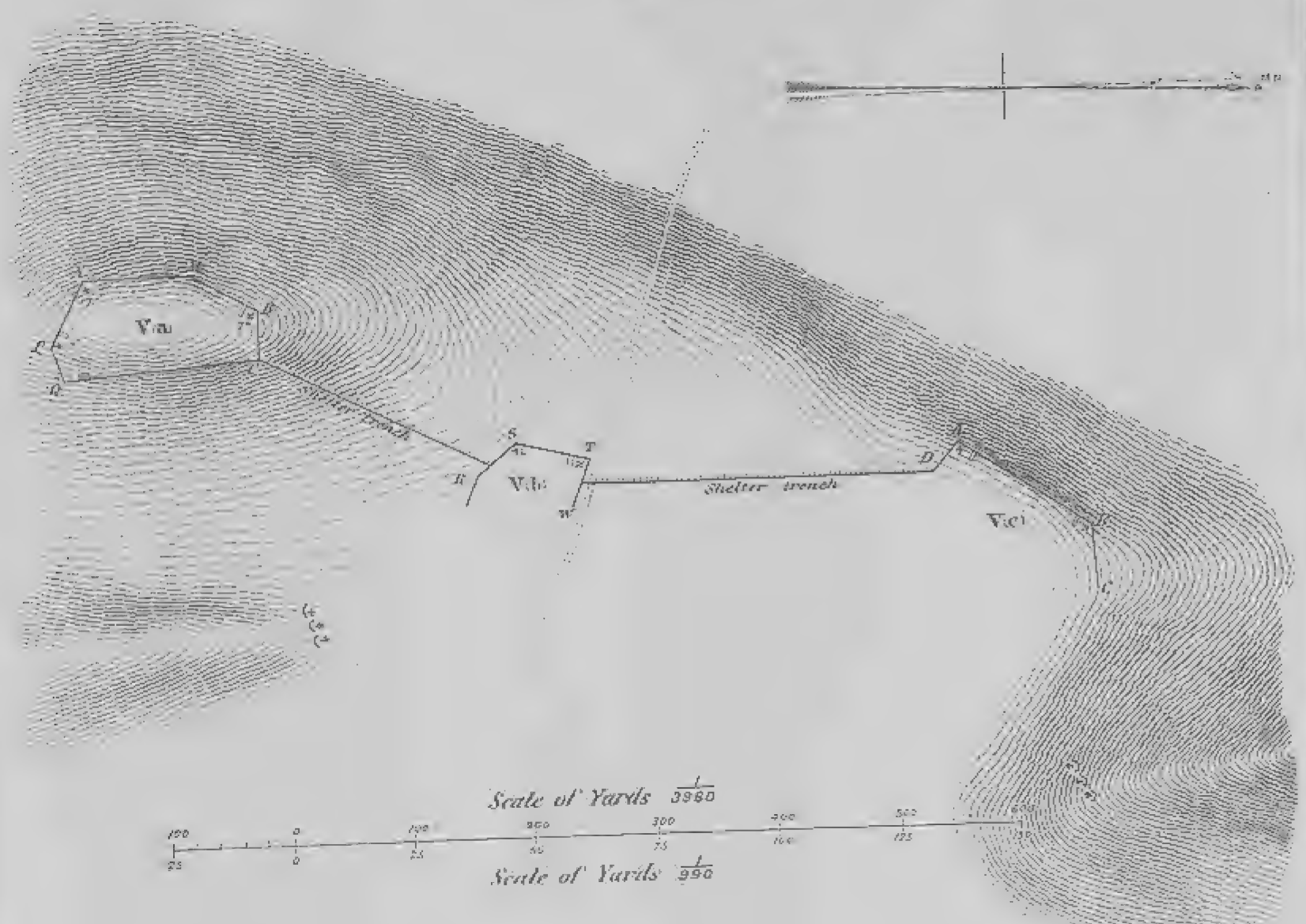
21 12 78

V (a,b&c)

Tozalak Redoubts

ARMAMENT 3, 7 IN. 4, 40 PRI

Lith^d at the Intelligence Branch, Q^r Mr Genl Department
under the Auspices of [illegible]
[illegible]



Parapets of V(a) & V(b) Same as Fig 1 of I(a). Gorge Q. C. of V(a) same as Sec^tn 4 of VII. Parapets of V(c) same as Fig 1 of I(c)

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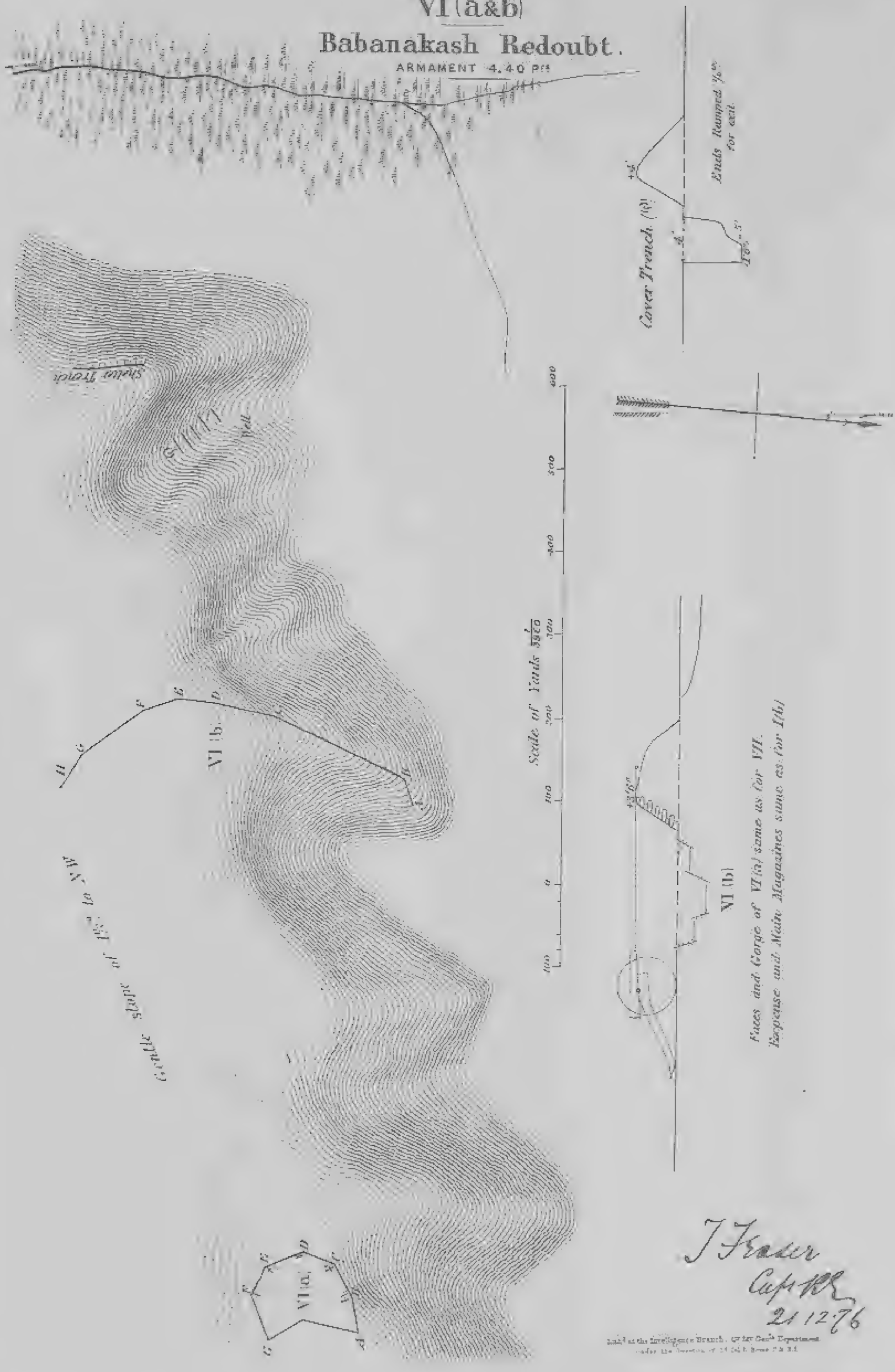
VI (a&b)

Babanakash Redoubt.

ARMAMENT 4.40 Pr.



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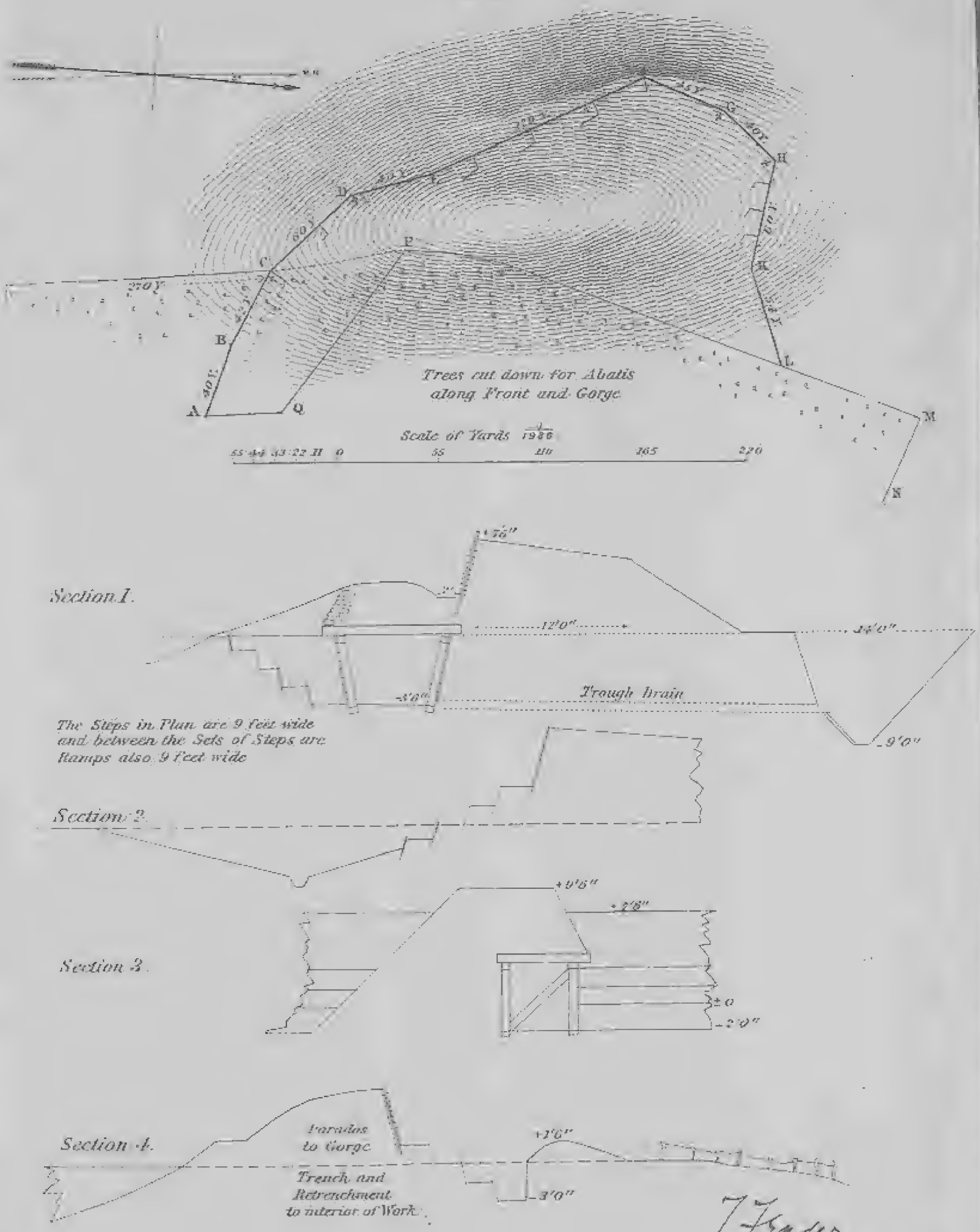
VII

North Vineyard Redoubt.



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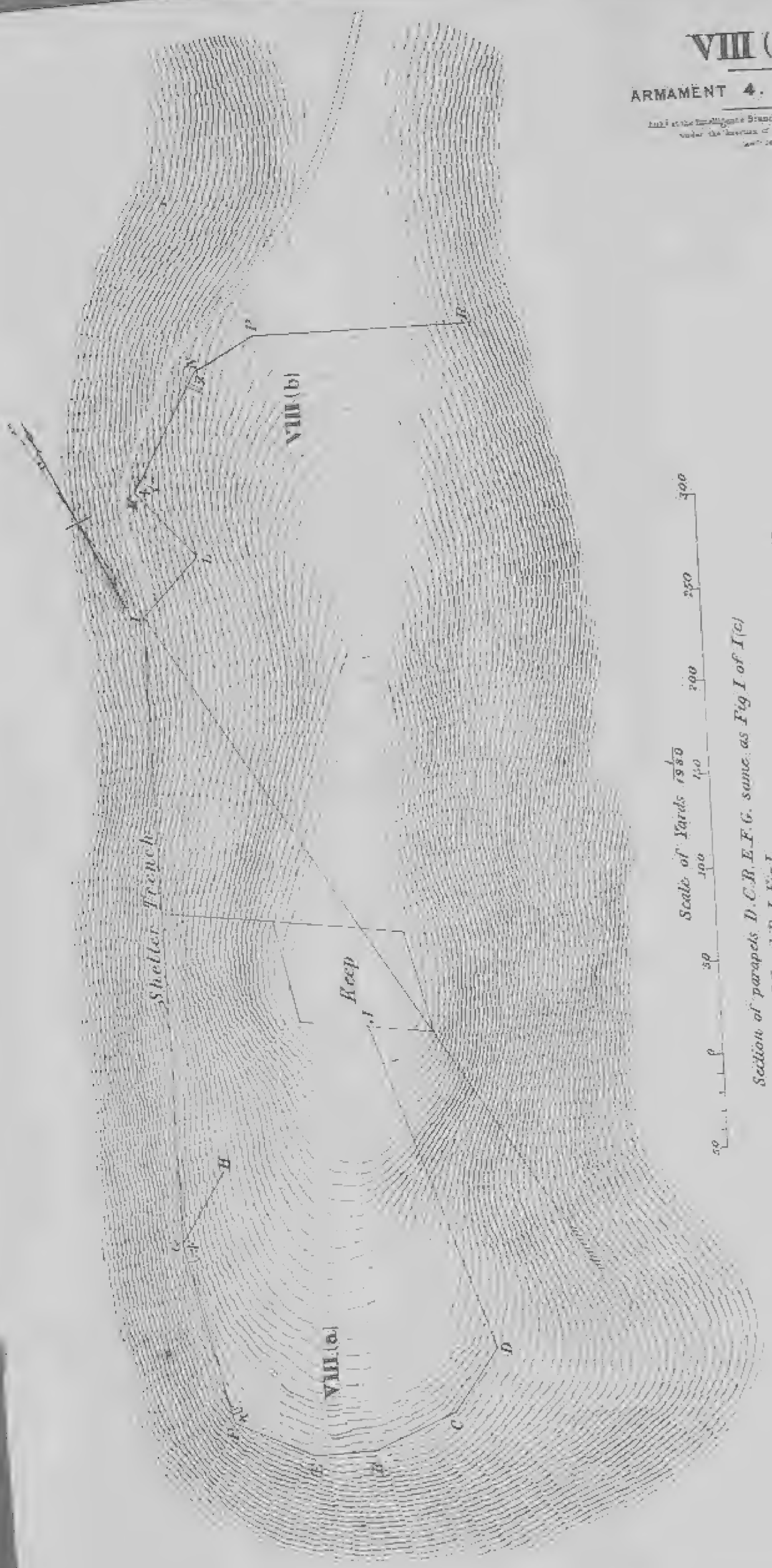
Capt R E
21·12·76

VIII (a&b)

ARMAMENT 4. 7in B.L.R GUNS.

Lith. at the Intelligence Branch, Qr. Mr. Genl. Department, under the direction of Lt. Col. R. Home C.B. R.E.



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VIII (c&d)

ARMAMENTS 240 Pr^s EACH.

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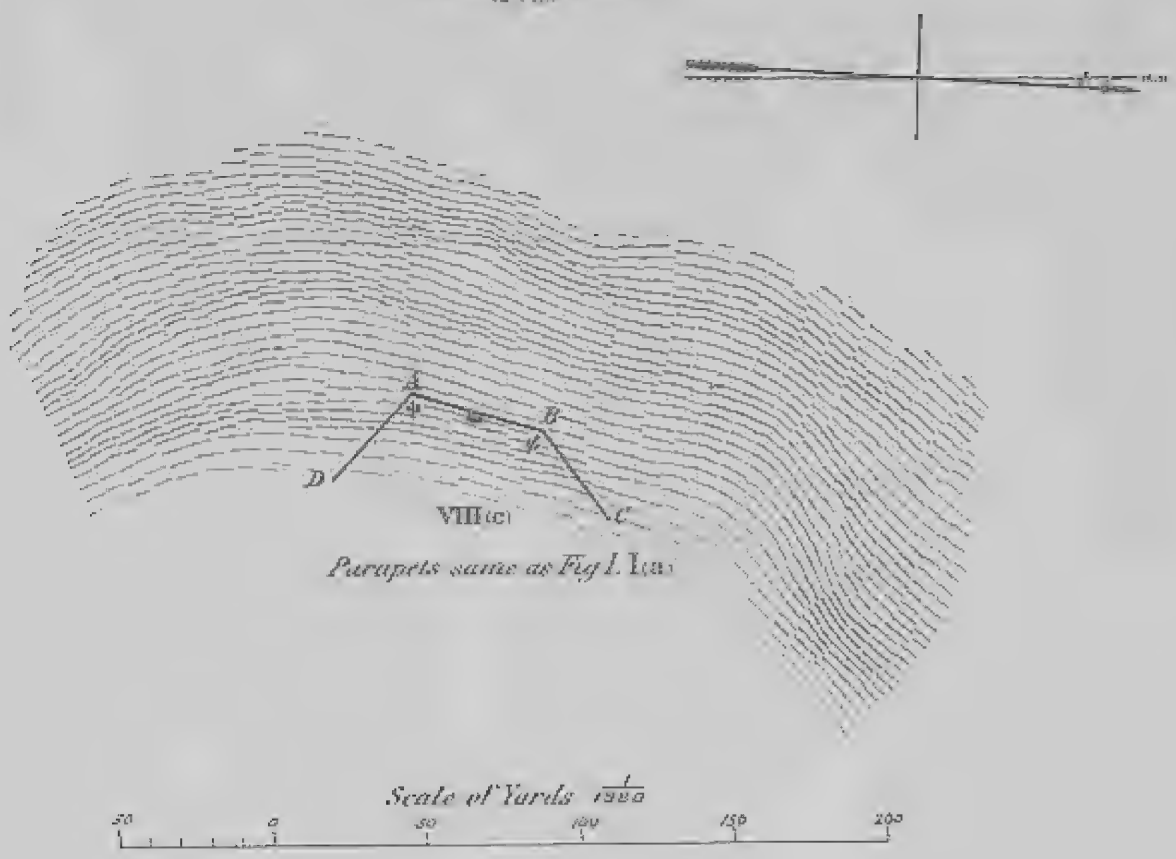
Jany 1877



Parapets same as Fig I. I (a)

As site is rocky, Guns on surface behind rough Gun pits.
Parapets of 2 hurdle walls 4' 6" high with earth (carried up) between:
Brushwood plentiful.

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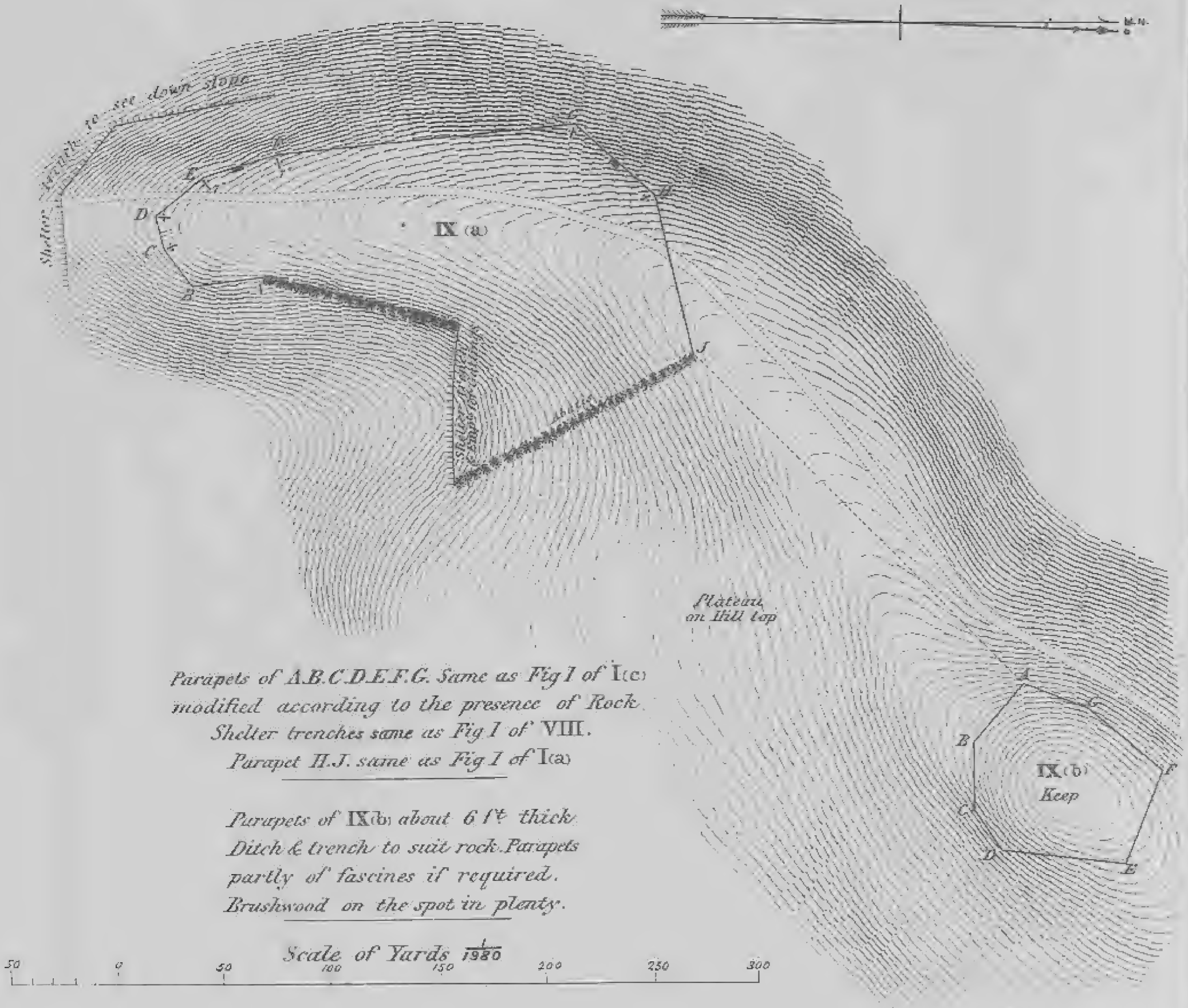
IX (a&b)

Urzunlu Redoubt

ARMAMENT 2.7.1st B.L.R. GUNS. 4.40 Pr B.L.R. GUNS.

Lith^d at the Intelligence Branch, Q^r Mr Genl Department.
under the direction of Lt Col. R. Home C.B. R.E.
Jany 1877.



Parapets of A.B.C.D.E.F.G. Same as Fig 1 of I(c)
modified according to the presence of Rock.
Shelter trenches same as Fig 1 of VIII.
Parapet H.J. same as Fig 1 of I(a)

Parapets of IX(b) *about 6 ft thick*
Ditch & trench to suit rock. Parapets
partly of fascines if required.
Brushwood on the spot in plenty.

Scale of Yards $\frac{1}{1980}$

50 0 50 100 150 200 250 300

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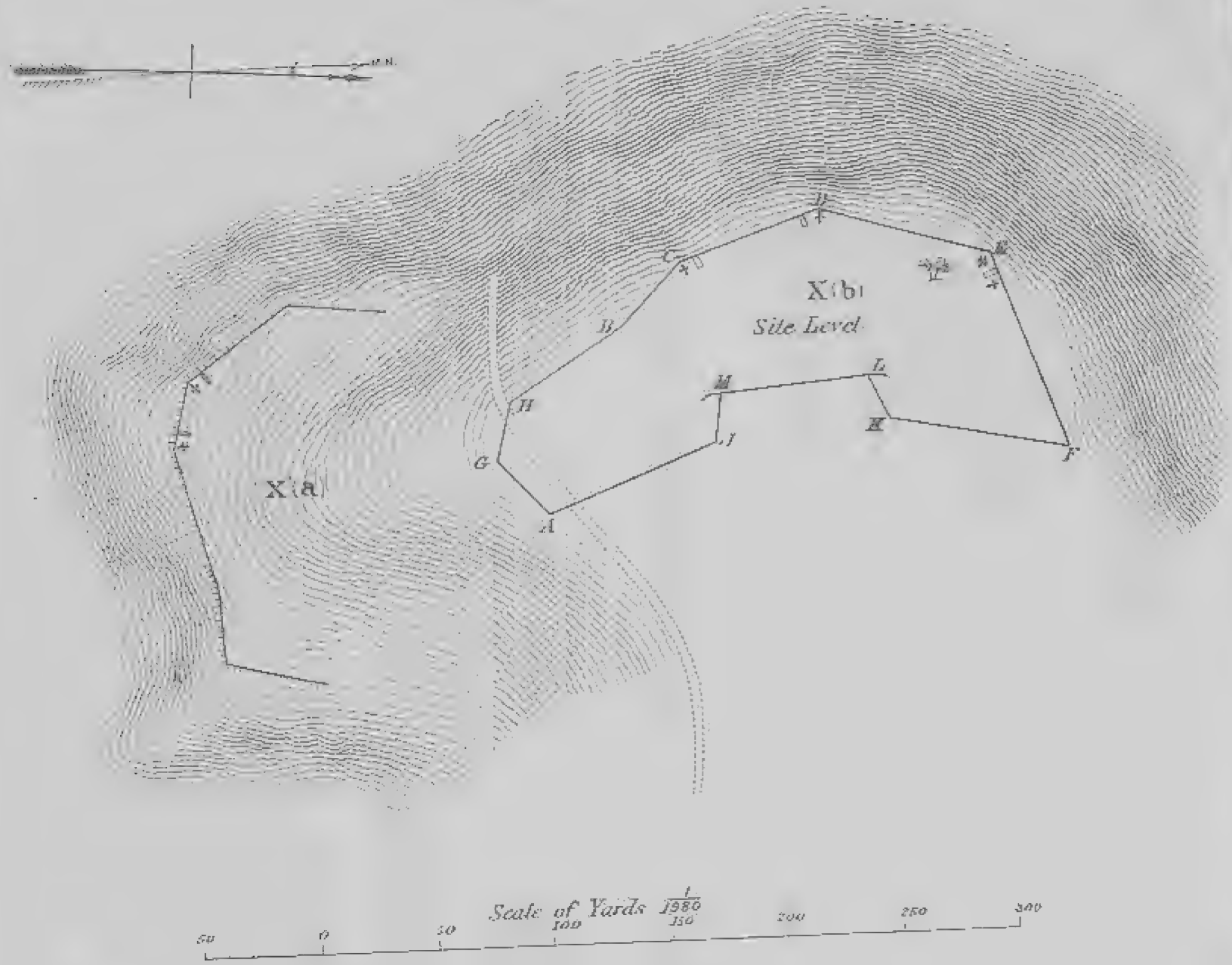
21-12-76

X (a&b)

Tree Redoubt.

ARMAMENT 6. 40 Pts.



Sections of X (a) same as Fig I of I (c)

..... Faces A.G.H.B.C.D.E.F, same as Fig I of I (a).

..... A.J.M.L.K.F, same as Section 4 of VII.

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21.12.76

XI (a & b)

ARMAMENT 4.40 Pr B.L.R. GUNS.

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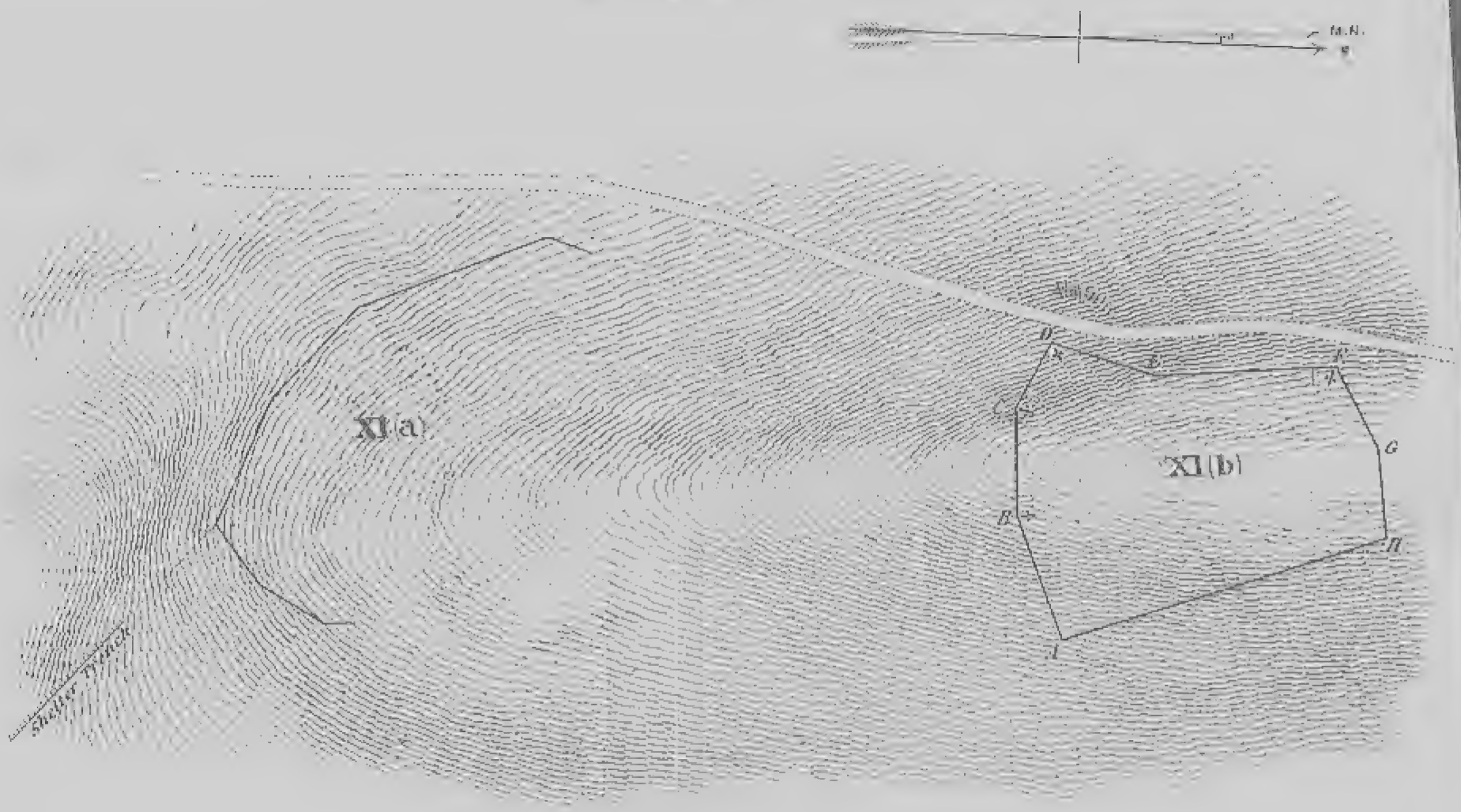
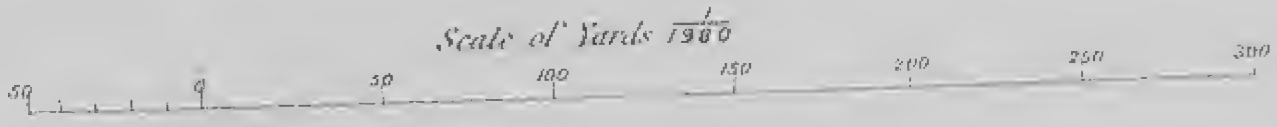
Jany 1877





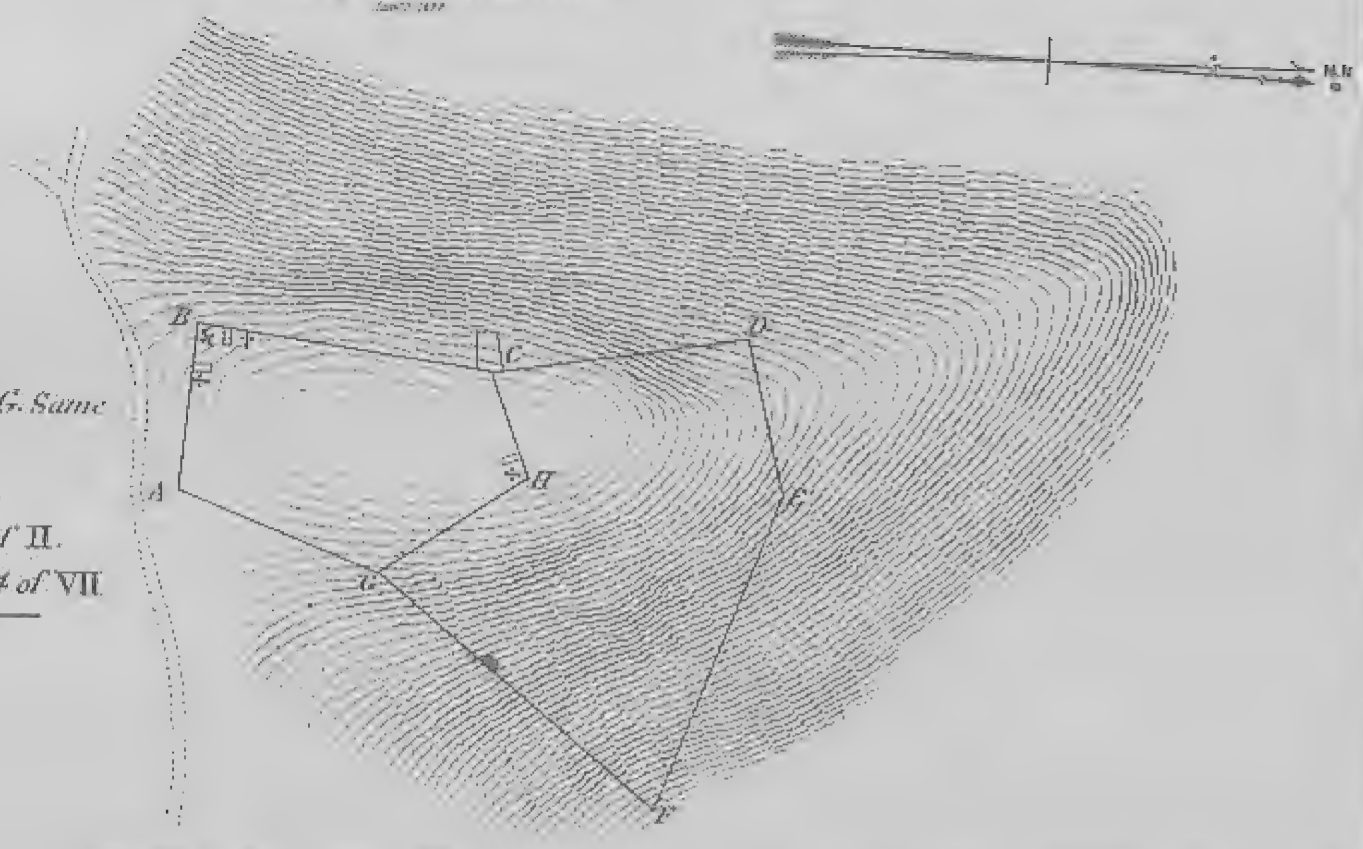
Sections of XI (a). Same as dotted part of Fig I of I (a)
" of A.B.C.D.E.F. same as Fig I of I (a)
Section of F.C.H. same as Sec: 4 of VII.
" A.H. " Fig I of II.
Prolongation of C.D. concealed by planting tall branches where shewn.

J. Fraser
Capt R.E.
21 12 76

XII(a,b&c)

ARMAMENTS XII(a) 4 40 Pcs. XII(c) 2 40 Pcs.

Lith^d at the Intelligence Branch, Q^r Mr Genl Department
under the direction of Lt Col. E Hope C.D.E.F.
Jany 1888



Sections of A.B.C.H.G. Same as Fig 1 of I(a)
C.D.E.F. the same.
G.F. same as Fig 1 of II.
A.G. - Sec^tn 4 of VII

Section of XII(b) & XII(c) *Same as for* V(b)
Except before the guns at D & A where they are on the surface and parapet is thickened to 15 feet before them.

Scale of Yards 1/960

50 0 50 100 150 200 250 300

T Fraser Capt RE
21 12 76

XII (d&e)

ARMAMENTS 2.40 Pr

Scale of Yards 1/1980

50 0 50 100 150 200 250 300

Parapets of XII(d) same as in Fig1. of 1a.

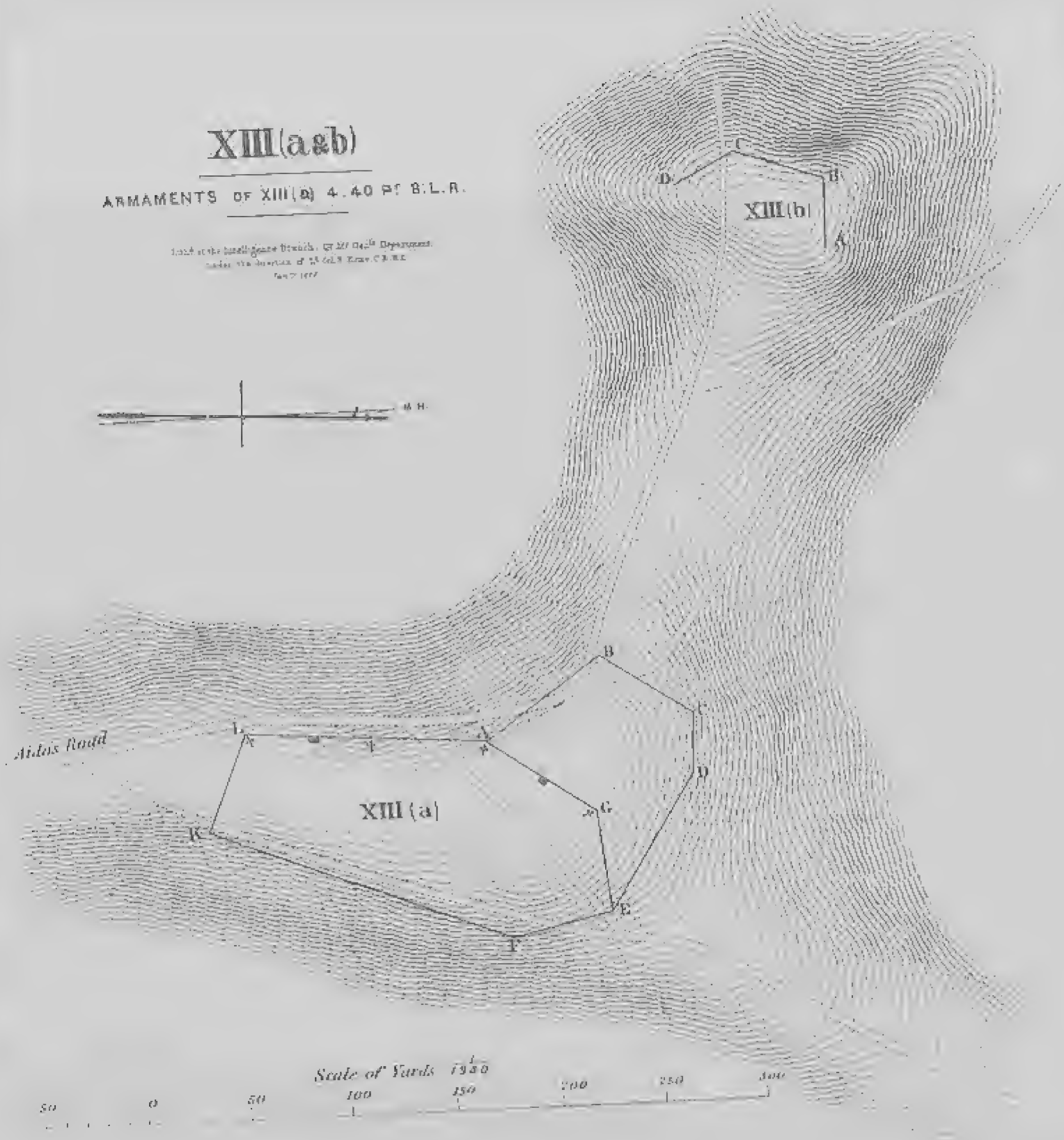
.....(e) consist of 2 field gun-pits and Shelter trench.

J. Fraser
Capt RE
21/12/76

XIII (a & b)

ARMAMENTS OF XIII (a) 4.40 Pr. B.L.R.

Lith. at the Intelligence Branch, Qr. Mr. Genl's Department.
Under the direction of Lt. Col. S. Rowe, C.B.R.E.
Jan. 7 1877



Parapets of XIII (b) same as V (b).
K.L.A.G.E. same as Fig I of I (a)
H.F.E. same as Fig I of II.
A.B.C.D.E. same as V (b)

XIII (c)

Two position Gun-pits connected by a parapet same as Fig I of II.

T Fraser
Capt R.E.
21.12.76

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No. XI. (*a*) and (*b*).

Armed from tramway at XIII. (*b*).

The west slopes of the spur XI.—XII. require to be cleared of brushwood for some 100 yards and held by infantry. XI. (*a*) & (*b*).

The watershed ridge runs to W. between XI. and XII., and where it crosses the ridge XI.—XII., an infantry work is required.

The front of ridge XI.—XII. is flanked by a small work thrown out on the saddle-back.

No. XII. (*a*).

The site of this work is clear; it commands the watershed ridge to the west, and sees into XI. XII. (*a*).

No. XII. (*b*) and (*c*)

Are small works, each shooting into the work in front of it. They stand on bumps in the main saddle-back, and hold the saddle-back step by step. XII. (*b*) & (*c*).

No. XII. (*a*) to (*c*) are armed from XIII. (*b*).

No. XIII. (*a*), (*b*), (*c*).

These works also hold the saddle-back from XII. (*a*) to XIII. (*b*). They are armed from the tramway. XIII. (*a*), (*b*) & (*c*).

In the whole of these works (XI. to XIII.) water is not found on the sites, but can be got near at hand in the valleys. They will require drainage, and the obstacles will be entanglements of brushwood and wire.

To north of XIII. (*c*) an emplacement for light guns or mitrailleurs has been chosen, to command the open space round a farm near Derkos Lake, and so to close the right of the position.

The whole country between XIII. (*b*) and Derkos is so densely wooded as to be practically impassable. These woods are of about the height of, but more dense than, Kentish hop-woods of from 3 to 10 years' growth.

T. FRASER,
Captain, R.E.

Lieut.-Colonel Home, C.B., R.E.

Inclosure 2 in No. 8

A.

REPORT ON THE BUYUK-CHECKMEJEH LINE, ACCOMPANIED BY ONE TRACE ON LINEN, SHOWING THE POSITION OF THE WORKS.

Report on the defensive position extending from the Sea of Marmora to the Black Sea.

THE strong position which covers Constantinople from an attack by an enemy moving from the westward on the city, has been well-known for many years, and has, in the former history of the city, saved it on at least two occasions from destruction,—viz., in 559, when Belisarius defeated the Bulgarians, and in 668, when the Arabs attempted to capture the city. *History of the Position.* Anciently.

V. Moltke draws attention to its strength and peculiar advantages in his history of the war of 1829. V. Moltke.

Major-General Macintosh, in his book published in 1854, describes this position in great detail, and with considerable accuracy, giving a fair plan of the position on a scale of two-thirds of an inch to a mile.* Macintosh.

* This book is well worth perusal.

Burgoyne.

Sir John Burgoyne reported on it in 1854, when a sketch of the southern half was made by the late Sir W. Gordon, on a scale of 4 inches to a mile.

The World newspaper.

At the beginning of this year reports were prepared on the defensive capabilities of this position, by the Quarter-Master-General, and during the course of the year numerous articles on it appeared in the *World* newspaper, *Galignani*, and several other journals. This position is remarkable as being one, the military importance of which, has increased rather than diminished since the improvement of artillery and small-arms. It thus differs from many other positions, which celebrated in former days, and under different circumstances have lost much of their value since the accuracy and range of weapon has been increased.

Improvements in arms have not diminished its value.

Most descriptions are partial, and deal only with the southern half.

Curiously enough most of the descriptions and plans that have hitherto been made of this position have dealt almost entirely with the southern half, and appear to have been made by persons who have either not visited the northern portion, or who have assumed it to be similar to the southern portion they have seen from the roads that here intersect the position.

The Little Balkan.

The Peninsula bounded by the Sea of Marmora, the Bosphorus, and the Black Sea, at the south-eastern extremity of which the city of Constantinople stands, is traversed from west to east by a range of hills which attain a maximum elevation of some 1,200 ft. This ridge is termed the "Strandja or Little Balkan"; it runs at an average distance of 4 to 6 miles from the Black Sea, and 16 to 20 miles from the Sea of Marmora.

A well-defined ridge with spurs.

It consists of a well-defined central ridge, which throws out marked spurs north and south, those to the south being much longer than those on the opposite or northern side.

Peculiarity of these spurs.

The flanks of these spurs are usually broken into ridge and valley. These secondary ridges running parallel with the main ridge, or east and west.

The great peculiarity of this ground, and one which it is believed is unusual, is, that the valleys sweep into the central ridge itself, and by their intersection form a series of depressions on it. Thus, in every case the point of junction of a spur with the ridge to which it belongs is the lowest part of the ridge and spur. These details are given because the military occupation of the ground is mainly dependent on a correct understanding of its topographical features.

Military occupation of the ground dependent on correct understanding of topographical features.

Where the valleys join the main ridge they often cut into it, and into the spur between the valleys, so much as to leave narrow cols, or saddle-backs, with a level surface of 30 to 60 yards wide, and a very sudden descent on each side, the ridge rising rapidly on each side of the col, and the spur rising gradually towards its extremity.

Ground difficult to understand by description.

This ground is exceedingly difficult to understand when first inspected—it is still more difficult to understand by description, but an examination of the sketches that have been sent, or accompany this report, will elucidate it.

Second line.

By holding these cols or saddle-backs, a retired or second line of very great strength is obtained. The flanks or sides of the spurs are invariably very steep, their extremities slope gently to the front. It is manifest that a series of redoubts occupying the salient points of these spurs will, so long as they are uncaptured by an enemy, deny him all access to the position. For no enemy, however bold and enterprising, would dare to advance between two powerful redoubts and make his way up a long narrow winding valley, where his troops would be jammed together, and at the mercy of a very small body of cavalry pushed rapidly down the valley, the bottoms of which are usually sound galloping ground.

Holding the extremity of the spurs denies the position to an enemy.

Great advantage of cavalry in helping the defence.

The advantages which this peculiar formation of ground confer on a defender, using his cavalry in small bodies in this way, are very remarkable; they should not be lost sight of, and will be again referred to. The writer may here respectfully submit, that the fact that the position to be held is a *defensive one*, should not be allowed to reduce the force of cavalry to be sent out; cavalry will, it is believed, be a most efficient and valuable arm in aiding the defence.

It is felt that the above description is very imperfect, but such topographical details are always difficult to explain; yet in a matter of such vital importance, it is desirable that all details should be laid before those who have to decide these questions.

Position much complicated at the northern extremity.

At the northern end of the position, or where it crosses the Strandja or Little Balkan hills, what has been described is much exaggerated; the valleys and spurs are more numerous, narrower, and steeper, and, until some careful study is bestowed on them, appear a confused mass—an apparent confusion which is increased by the fact that the slopes are clothed with dwarf oak and juniper scrub.

General front of the position.

The defensive position known as the Buyuk-Checkmagee—Derkos position is formed of two valleys which, running north and south from the Sea of Marmora to Lake Derkos, are separated by one of the lowest and narrowest cols, on the main ridge. Standing on this col, both waters are seen, and the two streams which take their rise at the foot of the col, run north and south, seeking the Black Sea and Sea of Marmora respectively. The valleys in which these streams run are from 4,000 to 5,000 yards wide, and these streams and valleys constitute the front of the position, or the dividing line between the attacker and defender; on the western, or attacker's side, the whole formation of the ground changes. It will be hereafter described.

Length of the position.

The length of the position to be defended is reduced by the harbour of Buyuk-Checkmagee and Lake Derkos from 27¾ miles to 19¾ miles. The whole surface of the country, as far as the villages of Urzunlu and Kissilyaly, is perfectly open. There are no trees except round the villages. There are no fences; about one-half of the surface is under corn, the remainder under grass. The general appearance of the surface of the ground is very similar to the South Downs, especially those in the neighbourhood of Brighton. To the north of the village named the country is covered with dwarf scrub, which extends to Lake Derkos and covers the ridge between that sheet of water and the sea.

Nature of the surface of the ground.

Position of the redoubts.

The slopes of the hills to the front are generally gentle, and, as far as defence is concerned, excellent. The works to be placed on them may be easily arranged, so as to flank one another, and sweep every inch of the ground over which an enemy must pass.

Position possesses many good points.

From the foregoing general description it is manifest that the position, viewed as a whole, is one of very great strength, and that it posseses many, if not most of the requirements for defence by "a limited force" as stated in the instructions under which this report is prepared.

Defects.—Difficulty of internal communication.

But it has one great defect, viz., the communication from one part to another is difficult.

Troops posted for the defence of one portion can be moved to support another only by crossing the valleys, a difficult and laborious operation, owing to their steepness, or by going round their extremities, which necessitates a long and circuitous march. For an army holding a defensive position with "a limited force," this is an important defect.

The defenders of such a position may be divided into two portions, the garrison of the Redoubts, and the troops that defend the intervals and act on the flanks of an enemy advancing to assault the redoubts. A false attack or feint on one portion of the position may lead to the withdrawal of troops from another part, which in a short time may be made the objective of the real attack. Under such circumstances, it would take time to get the troops back again.

Position better adapted for permanent than field works.

The ground is better adapted for permanent works than for field works, supporting, or supported by, an army of "limited force."

Force of cavalry important.

This is a matter which in the defence of these lines must be kept continually in view, and this difficulty of communication has induced the writer to suggest numerous telegraph and look-out stations, which will be dealt with hereafter. Further, it affords another reason for increasing, rather than reducing the force of cavalry which may be detailed for service in the East.

The foregoing is a general description of the ground. The main redoubts, or those which it is proposed to construct and arm prior to the arrival of the Army, are shown on the sketch in red; the minor works to be constructed after the arrival of the troops, in yellow.

A detailed drawing, with sections of each work, is attached. For convenience in describing the positions occupied by, and the object of each work, the whole part may be divided into three portions:—

Division of the position into left, centre, and right.

1. From the Sea of Marmora to the Railway, *or the left*.
2. From the Railway to Urzunlu, *or the centre*.
3. From Urzunlu to the Black Sea, *or the right*.

The Left.—From the Sea of Marmora to the Railway.

The Left.

That portion extending from the Sea to the Buyuk-Checkmagee bridge may be said to be completely protected by the Harbour and the fire of men-of-war presumably anchored there.

Ford at the Buyuk-Checkmagee bridge.

The Bridge is 750 yards long and can be easily destroyed, but the Lake *immediately* above the bridge may be crossed in two-feet of water.

There are, it is true, many holes where the water is from 5 ft. to 6 ft. deep, and the operation would be a difficult one; it is, however, quite possible.

Further, troops attempting to pass the ford would be protected, to a great extent, from the fire of ships, not only by the range, but also by the *débris* of the destroyed bridge.

Additional obstacles requisite.

Additional obstacles are required to prevent an enterprising enemy effecting his passage. Also a strong work to command the bridge and neck of land which here separates the Harbour from the Lake.

Redoubt No. I.

This work it is proposed to place in rear of the village—plans and sections of it are given, Fig. (I, *a. b. c.*) A small embankment which protects the low land close to the sea from the action of the waves and floods, affords an excellent breast work for Infantry.

From the bridge northwards the backwater widens rapidly and is nearly 2,000 yards wide in some places.

Buyuk-Checkmagee Lake cannot be considered a perfect obstacle.

This Lake is *said* to be 8 ft. deep in parts, after a day spent in sounding it, the deepest water obtained was 5 ft., the general depth being 3 ft. 6 in. The bottom is *said* to be muddy in parts. Horses, however, may be ridden in up to the girths at any place, and the bottom, when this has been done, was always found to be hard sand. While it must be acknowledged that such a sheet of water is a great protection, it cannot be denied that an enterprising enemy would soon find means for passing it if its eastern shore was undefended.

The ground behind lake must not be denuded of troops.

The ground from Buyuk-Checkmagee to the head of the Lake cannot therefore be denuded of troops.

Minor works only required.

It may, however, be held lightly, no large works are requisite, and the requirements of the case may be met by emplacements for Field Artillery, shelter trenches, and such minor works; a good deal of security may be also afforded by obstacles which will be hereafter referred to.

True length of position not from water to water, but must include the lake.

The ground here is firm though much of it is but a few inches above the lake; it affords admirable ground for Cavalry, who could charge troops disordered by an attempted passage, with great effect.

It is evident from the foregoing that the length of line to be defended cannot be taken as that from the head of the Lake to Derkos, or from water to water, but must be mensured from Buyuk-Checkmagee to Derkos.

Esskidshi-Tchiftlik. No. II.

Close to the northern extremity of the Lake is situated the Esskidshi-Tchiftlik. This large farm lies on the south slope of a hill, the top of which it is proposed to hold with a Redoubt No. II., Fig. II., (*a*) and (*b*). This Redoubt crosses

Functions of this work.

fire with the Buyuk, or No. I. Redoubt, at a distance of 8,000 yards, a distance far too great for efficient defence, but with the protection given by the Lake and a moderate force acting between, it is believed that this portion of the line may be made perfectly secure. No. II. Redoubt also sweeps the Marsh which extends from the head of the Lake to the Railway, it also flanks at a distance of 3,500 yards the railway here carried on a viaduct, which must be destroyed.

Marsh, if not impassable, would be very difficult.

The marsh is said to be impassable at all seasons as far as the railway. It certainly is so now, for some distance above the railway, and it is believed it may be made very difficult to cross, if not quite impassable.

Railway Redoubt; No. III.

The next work to be considered is the Railway Redoubt No. III. This work is one of the most important on the whole line; it is situated in a loop of the railway, which here descends the hill in a succession of curves and in rear of the Tartar village of Baghtchaish. It is situated on rising ground sloping gently all round. It flanks the railway at a distance of 1,700 yards from the

Its importance.

Function of the work.

bridge, and crosses fire with No. II. Redoubt at a distance of 4,400 yards. This work, which is of first-class importance, should be supported on both

flanks by emplacements for field artillery and shelter trenches. The village of Baghtchaish should be also placed in a state of defence and covered by shelter trenches. The valley between this work and No. II. is a water meadow, but it is passable by horsemen at this season everywhere, and it is believed will be quite passable in summer. The mouth of the valley, where it debouches on the marsh is well under fire from No. II. Redoubt, and troops, having forced a passage over the marsh (if that be possible), would be in great confusion, and, it is submitted, could not advance. This work is shown at Fig. III. (*a* and *b*). It is conceived that the works described, aided by the existing obstacles coupled with those that may be made, and will be described under the heading of *obstacles*, will render this portion of the lines perfectly secure. A force of 15,000 men, with a proper proportion of field artillery and cavalry, would, it is believed, hold this portion of the lines. The head-quarters of this force should be placed at the village of Kara Aghatch.

Must be supported by minor works.

Obstacles requisite.

Garrison Head-Quarters.

The Centre.—From the Railway to Uzunlu.

Second or centre section.

For reasons which will be discussed when the enemy's position is considered, and his attack on the lines developed, it is believed that the centre will be the position he will attempt to force. Fortunately the centre is, as regards defensive capabilities, the strongest portion of the whole.

Centre most likely to be attacked.

No. IV. Redoubt.

Its situation.

Its functions.

North of the railway there is a valley somewhat similar to all those that intersect the front; it is, however, much narrower and straighter than they generally are. The spur forming the northern side of this valley rises at its extremity into a prominent knoll. This it is proposed to hold with a redoubt.

This redoubt is slightly retired behind the general line. It commands, at a distance of 2,600 yards, the bridge over the Kara-Su stream; four roads meet at this point, one, the Adrianople-Tchataldja-Constantinople road is of some importance. It is not a macadamized road, but, next to the Adrianople coast road, it is the best road that crosses the position. The bridge over the Kara-Su must here be destroyed. This redoubt, No. IV., crosses fire at a distance of 2,600 yards with No. III., or the Railway Redoubt. It also sees the point of the slopes descending from the village of Izzedin, which divides the Kara-Su from its feeder that runs close to Tchataldja. The details of this work are given on Fig. IV.

Tozalak-Tchiftlik. No. V. Redoubt.

Its situation.

Its functions.

The hill on which No. IV. Redoubt is situated is separated by a very small valley from a large commanding hill, on the lower slope of which stands a farm, Tozalak-Tchiftlik. This farm, built, like all Turkish farms, in a manner well adapted for defence, stands on the lower slopes of the hill. The ground is admirably adapted for defensive purposes, it slopes gently to the front in a regular glacis-like slope. This work is one of great importance, and it is proposed, as will be seen by an inspection of Fig. V. (*a*, *b*, and *c*), to hold the ground very strongly. The Tchataldja-Constantinople road passes close to the redoubt. This road leads direct on Hadem Keui. The ground, if captured, would open an easy passage to an enemy, as the Redoubts Nos. IV. and VI. do not see one another. This work crosses fire with the last, or No. IV. Redoubt, at a distance of 1,800 yards; it also sweeps the Kara-Su stream, with the bridge carrying the Tchataldja road at a distance of 1,750 yards.

Babunakkash Redoubt. No. VI.

Situation.

Functions.

North of the Tozalak-Tchiftlik Hill there is a wide valley with a stream running in it. The northern side of this valley is formed by a long low hill, which is the only feature of the sort in the position. It is proposed to erect a redoubt on it. This redoubt is commanded by No. V Redoubt, with which it crosses fire at a distance of 2,000 yards; it sees well to the front, and flanks the Tozalak or No. V. Redoubt.

This work is well placed to give a grazing fire over the ground in front; the nearest point of the enemy's position which commands it is at a distance of 6,500 yards Shelter trenches and emplacements for field artillery, which may easily be withdrawn (if requisite) under cover, should be constructed here. (Fig. VI., *a* and *b*).

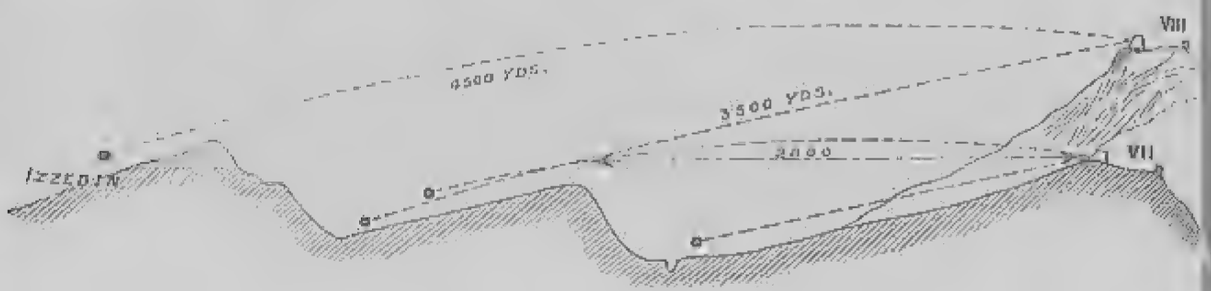
Vineyard Redoubt. No. VII.

North of this work the ground slopes gently to the Babunakkash stream, and then rises gently. It will be observed that the configuration of the hill forming the northern side of the Babunakkash Valley is peculiar, it has an under feature, which is bent round like a hook. Upon this lower feature a

Situation. Functions. Must be very carefully constructed. Action of cavalry here most important. Function of Nos. VII. and VIII. Redoubts.

most favourable site for a work occurs; it flanks the works to the right and left, it fires across the low ground in front, and crosses fire with No. VI. Redoubt at a distance of 2,700 yards. This work is slightly salient, the ground occupied by the enemy approaches to within 2,800 yards, and it is the work which an enemy, seeking to force the centre of the position, would attempt to crush. For this reason, great care will be bestowed on the work, bomb-proof shelter will be provided liberally, some of the guns will be blinded, and every means adopted to strengthen it. Further, an excellent abatis can be formed in front of it, there being a sufficient number of large trees at Babanakkash for the purpose.

The Babanakkash Valley offers an excellent example of how well cavalry may be used to support this position. Sheltered in the hollow behind the village, or between the windmill, and the hook-shaped hill on which No. VII. Redoubt stands, a body of Cavalry would be perfectly secure, and unseen; circling rapidly round the flank of the hill, they would take in flank any troops that an enemy might have pushed across the stream. Such a body of Cavalry need not be large; its appearance would force an enemy to close his men together and so expose them in masses to the fire of the works. A rough section of the ground from the Vineyard redoubt across the enemy's position is given.



The curious glacis slopes of the Izzedin ground will be hereafter described. The redoubt No. VII., sees the first fairly, but both are well commanded, though at long range from the next redoubt, No. VIII. (*Vide* Fig. VII.)

No. VIII. Redoubt. Its site. Functions.

This redoubt is situated on the hill, which is the main feature, No. VII. being on the under feature. This hill is very steep, the top for some 15 to 20 feet may be scarped so as to make it nearly vertical, the slopes in front cannot be seen by direct fire, but are well flanked from No. VII. Redoubt, and an emplacement for field artillery on its right. This work sees well behind the Izzedin slopes, and plunges into the position where an enemy would seek to mass his troops for attack; it further fires across the Babanakkash Valley in rear of No. VII. Redoubt, which it entirely commands at a distance of 1,200 yards.

This work is one of great value, it crosses fire with the work on the Urzunlu hill, at a distance of 4,000 yards, and completely dominates the surrounding country; 7-in. B.L.R. guns placed on this hill would completely deny the use of a considerable portion of the Izzedin slopes to an enemy, and an enemy who attempted to place guns in battery on their reverse slopes, would find himself seen into and commanded. An emplacement for field artillery and shelter trenches are required to the north; they are marked on the sketch. (*Vide* Fig. VIII., *a*, *b*, *c*, *d*).

Garrison of central position.

Such is the central section of the line; it is believed that it may be firmly held with 15,000 men in proper proportion of Artillery, Cavalry, and Infantry, and a reserve of 5,000 men, or 20,000 men altogether.

Head-Quarters.

It is proposed that the head-quarters of this section should be at Babanakkash.

Left and centre are comparatively simple. Difficulties of the north or right position.

So far there could be neither doubt, nor difference of opinion as to the best line to select, and the best points on which the redoubts should be placed. It is different as regards the northern section. There are three distinct lines that may be held, each of which possess certain advantages and disadvantages, and it has been only after a careful study of the position that the line now submitted has been adopted. As, however, in a matter of such vital importance, it is most desirable to place before you every point that may aid His

Royal Highness in deciding on such a question, at the risk of extending this report, a description of all three positions is given, with an analysis of the reasons which have led to the adoption of the line now proposed. Necessity of submitting details to His Royal Highness.

At a short distance north of No. VIII. redoubt, the Kara-Su stream divides into two branches, one branch continuing its original course, of nearly north, leads to the dividing col, or ridge between the Sea of Marmora and the Black Sea; behind this ridge there is an admirable position for works; to the north of the col or dividing ridge, a straight valley runs to Lake Derkos. Division of the Kara-Su stream.

Hitherto the line has been, practically speaking, straight; there are no salients, or at least none of any importance on it, and at first sight, it would appear best to continue the line due north by holding the points marked A, B, C, D, E, F. Holding such a line would follow the natural lay of the country. So far as the point D there was no difficulty in the matter, but the points E and F could not be reached, except with great difficulty. The road marked "Aidos road" does not communicate with these points, except by tracks which are quite impassable; the ground is by no means strong; troops holding the points E and F would be entirely *en l'air*, and could not be supported, and their supply would be most difficult. Further, the construction of these works would entail a great amount of clearing. The work on F, to close the whole line on the Lake Derkos, would require to be a very powerful work, and the ground did not lend itself to such a work. Simplicity of continuing works in straight line. Difficulties of supply. Right *en l'air*. Great amount of clearing.

The question of supplying the troops is a most important one. In previous reports, No. 2, and No. 4., it has been stated that the depôts for the right of the line were to be formed near the village of Jaserin, at the terminus of the proposed branch railway from Hadem Keui to Jaserin, and the question at once arose, would it not be possible to find a position slightly in front of Jaserin, which would be capable of defence, would reduce the front, and would render the whole position more compact and easier to feed and support from the rear and from other parts of the position? Absolute necessity of considering how troops occupying redoubts are to be supplied. Desirability of finding a more retired position.

It has been said that the Kara-Su stream divides into two portions, one of which takes its rise in the dividing col between the two seas, the other takes its rise in the deep valley where the village of Kissilyaly is situated. These two streams are divided by the long ridge of Urzunlu, and the sloping ground on which the village stands. Description of the retired position.

The valley is at first 2,500 yards in width; it, however, rapidly contracts above Kissilyaly; the valley is more like a ditch than a valley, being only 350 yards wide, with steep sides. It reaches the main ridge some three miles from Jaserin, thence a valley extends behind the village of Delijunus to the Lake of Derkos.

This position offers many advantages; it is more compact, easier to feed and supply, and, although somewhat longer, may be held by as small a force as the other; but the holding of this position resigns to the enemy a large extent of ground most favourable for an attack—* Objection to the retired position.

1st. The hill and village Urzunlu.
2nd. The whole of the wide spur between that village and Lake Derkos. The hill at Urzunlu.

The former commands the whole of the ground between No. VIII. Redoubt and the village of Kissilyaly, at ranges varying from 3,500, 3,000, 2,500, 2,000, and 1,500 yards; that is to say, the main position would be entirely under the guns of an enemy posted on the Urzunlu Hill. Further, the long ridge extending from this hill through the village affords an admirable place for an enemy to mass his troops for an attack on that portion of the line so commanded. Advantages of this hill to the enemy.

The long curved and wooded valley above Kissilyaly, within 350 or 400 yards of an enemy strongly posted, would require a large force to be maintained continually on the watch. Narrowness of the Kissilyaly valley.

The hill at Urzunlu is a point of cardinal importance; it looks down the whole front of the position as far as the sea; it sees well behind the Izzedin ridges. A good look-out at this point, supplied with a telescope, could see every movement the enemy may make; could telegraph their movements to

* This retired position is that proposed by General Macintosh.

Urzunlu cannot be given up.

each point, and so prevent the movement of troops to meet false attacks or feints. Its occupation denies to an enemy the use of the valley of the Kara-Su, and throws him back on the steep wooded hills above the villages of Kastanlik and Tchanakteha, where he could not move his troops or prepare for an attack.

Line proposed.

To hold the position securely, it is submitted that this point must be firmly held. If it be held the points marked B, C, and D, must also be held.

How it will be held.

No enemy dare attempt to turn the retired flank.

Instead, then, of extending the right to E and F, it is proposed to fall back along the main ridge, holding it very strongly at the point G, and with minor works, small redoubts, armed with either field artillery or 20-prs. at A, B, C, and D, no army would dare to force its way through the close wooded country between the main ridge and the lake in the face of the fire that could be brought on it from these works and the gunboats on the lake, more especially as there are no roads, and the ground is exceedingly difficult and broken.

Pencil sketch.

This position, then, is the one which has been selected. The small pencil sketch attached shows how the works support one another, and how, resting on the powerful central redoubt G, they form a strong support for the right of the line. As regards the supply of the troops, it is proposed to lay a rough tramway from Jaserin to the Redoubt G.

The above gives a brief account of the three lines, and the reasons which have generally led to the recommendation now submitted that the line A, B, C, D, G (pencil sketch) should be adopted.

The description of the works may now be resumed.

Urzunlu Redoubt. No. IX.

It has been said that the Kara-Su divides into branches a little above redoubt No. VIII. Neither stream is at present passable, except at certain places. In summer both are passable everywhere. The Urzunlu hill has a long under feature sloping towards both streams. Just below the hill the village stands. It is proposed to hold it in force, to surround it with a shelter trench and an abatis. The trees near the village are admirably suited for the purpose. Emplacements for field artillery should be constructed here in several places, so that the guns may be shifted from place to place, as may be found requisite. The guns will always have a safe retreat into the valley to the eastward if it be requisite to withdraw them.

Its site.

The village.

Covered way from the village to the hill.

The village is connected with the top of the hill by a track; the rain has worn this track into a watercourse some 4 feet below the general surface of the ground, and with very little trouble this hollow road may be converted into a very useful covered way communicating with the top of the hill. On the top of the hill it is proposed to construct a strong redoubt, firing in three directions, south, south-west, and west; and also to form here a look-out station to observe the enemy's movements in rear of the Izzedin slopes. The value of this point for this purpose cannot be over-estimated. The redoubt crosses fire with No. VIII. Redoubt at a distance of 3,800 yards, and with the emplacement for field guns referred to as flanking that work at a distance of 2,500 yards. (Fig. IX., *a* and *b*.)

The Tree Redoubt. No. X. Site. Object.

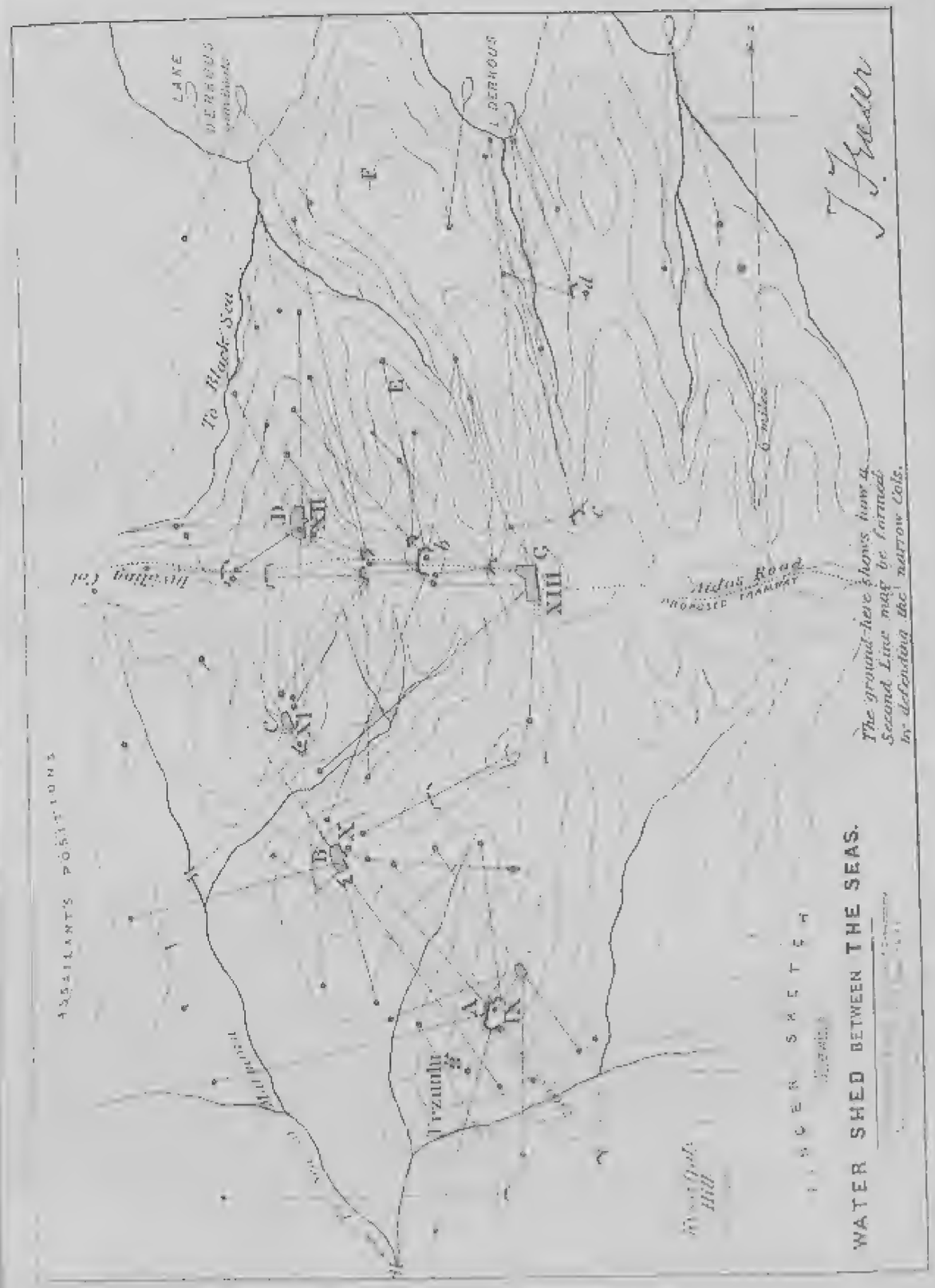
This work is situated on a very remarkable spur, which juts out at right angles to the long spur on which the Urzunlu redoubt stands. It sees down the valley as far as Buyuk-Cheekmagee, and denies the use of the valley to an enemy. It flanks and crosses fire with the Urzunlu work at a distance of 3,960 yards. (Fig. X., *a* and *b*).

Redoubt No. XI. Site. Object.

Beyond the last work there is a large valley with a narrow entrance. The ground here rises gently to the main ridge of the Little Balkan. A work will be placed here to flank No. X. Redoubt, with which it crosses fire at a distance of 2,610 yards.

This work also flanks the main col or dividing ridge between the two seas at a distance of 3,520 yards. The ground to the front of this Redoubt requires much clearing, about 20 acres of scrub must be cut away to open the front to the guns. (Fig. XI. *a* and *b*).

An emplacement for field artillery with shelter trenches will be made, so as to sweep directly the main col or ridge; this ridge is here very narrow and low.



This work is placed on the corresponding space on the northern side of the main ridge; the ground is here perfectly clear. This work flanks the main col or ridge at a distance of 2,840 yards; it also commands the redoubt No. XI. Redoubt No. XII. Site.

The eastern slope of the hill on which it stands is clothed with brush, but the bottom and mouth of the valley is clear and open. A double emplacement for field artillery will be placed immediately in rear of this work on the main ridge. These emplacements command both the redoubts No. XI. and No. XII. at distances of 900 and 1,000 yards respectively. These emplacements will also, when occupied, sweep the valleys to the north and south, and so flank the redoubts just referred to. They will also afford a cross-fire on the mouth of the valley closed by Nos. X. and XI. Redoubts. Immediately in rear the ground rises into a knoll, which it is proposed to hold by a Field Artillery emplacement. This work will afford additional flanking fire to redoubts Nos. XI. and XII., and it also sweeps a portion of the spur marked E on the pencil sketch. The scrub is here very thick, and almost impenetrable. The guns occupying these emplacements will plunge into the valleys. It is proposed to clear large spaces, over which an enemy must pass. Shelter trenches and additional emplacements will also be made here. It is manifest that the guns occupying these emplacements do not require any great range—a continuous and rapid fire is more requisite than range or accuracy. Gatlings would be here of great value, and a certain number should accompany the armament. 20-pr. guns might here be used with advantage. (Fig. XII. *a*, *b*, *c*, *d*, *e*). Object. Minor works. Clearings.

1,000 yards in rear there is an open space of considerable size on the dividing ridge. This it is proposed to occupy with a large and powerful work strongly armed with 40-pr. guns, and perhaps some 7-in. B.L.R. guns. This work acts as a keep to the whole position; it plunges into the works in front, which could not be held if captured; it crosses fire with No. X. Redoubt at a range of 4,200 yards, and it sees down the valley between the spurs marked E and F on the pencil sketch. The slopes of the hill here are thickly covered with scrub, and large quantities of this brushwood must be cleared. Redoubt No. XIII. Fig. XIII. (*a*) and (*b*). Its site. Its object.

Two small works, or emplacements for artillery will be made on a spur which abuts on Derkos, to sweep the valley leading to the lake, and cross fire with the steam launches proposed to be placed on Lake Derkos.

It will be observed that the whole of the works IX., X., XI., XII., and XIII. support one another, and constitute a position of very great strength, one which an enemy could not attack in front except by a regular siege, and which, from the nature of the ground, he could not attempt to pass by pushing his way between them and Lake Derkos. No roads exist. Roads would have to be made and the bush cleared before an army could attempt such an operation, and even were this done, clearing the bush would expose them still more to the fire from the works and gun-boats. Mutual support of the last five works, and strong position that, take it as a whole, they afford.

Large quantities of scrub must be, however, here cleared to open the ground to fire. This will be a laborious undertaking, but it will afford fire-wood for the Army. Clearings requisite.

The flank of this position will receive great support from steam launches, armed with boat guns, on the lake, which, from the way in which its arms are pushed up between the hills, is very well adapted for such manœuvres. Steam launches on Derkos absolutely requisite.

A force of 15,000 men, chiefly Artillery and Infantry, with a Reserve of 3,000, will be sufficient for the defence of this portion of the lines. Garrison.

The Head-Quarters of this force should be at Delijumas. Head-quarters.

Lake Derkos is at this point 10,000 yards wide; it is from 13 to 17 feet deep, and is well adapted for gun-boats, if such could be got on it. Lake Derkos.

It appears, however, that steam launches, carrying each a 20-pounder B.L.R. gun, are the largest vessels that can be got on the Lake. This subject will be reported on separately.

Between the Lake and the sea there is a neck of land, which sinks down into a low sandy isthmus. Neck of land between Lake Derkos and the sea.

This isthmus is traversed by the stream which carries the surplus water of the Lake to the sea; it is from 30 to 40 yards wide, and is generally deep, with banks covered with stunted trees and reeds. It is crossed by two rough sheer-line bridges and a line of telegraph leading to Burgas. The road from Constantinople to Burgas passes along this isthmus; it is a mere track. For the last 500 yards of its course this stream is very shallow, and offers no Outlet of the lake.

obstacle to a passage; elsewhere, that is to say for 2,300 yards, it forms an excellent wet ditch.

Must be defended.

A great portion of this neck of land may in fine weather be swept by the guns of men of war and the steam launches. But although the water in the Black Sea is very deep close in shore, no vessels would dare to anchor off the coast in even moderate northerly winds. The sea tumbles in on the beach with great violence, and any vessel that parted her anchors would be lost. The beach is strewed with wreck timber which points clearly to the danger of this coast.

Ships cannot anchor in northerly winds.

Work on the sand requisite.

Although the instructions under which this report is prepared assume that the flanks are covered by the fleet, yet they can be so protected only in fine weather, hence a work of some sort is required to defend the isthmus; a work of moderate size will, however, suffice. The Turks have a battery at Kara-Burnu, which contains 16 guns, four of which are 15 centimetre Krupp breech-loading guns. These guns, placed on the sand hills to the eastward, supported by 2,000 men and covered by the stream, would afford ample protection.

Guns from Turkish fort will suffice.

The garrison absolutely requisite for these lines would be therefore:—

Total force to hold the lines.

For the left	15,000	men.
For the centre	20,000	„
For the right	18,000	„
For the Isthmus	2,000	„
Total	55,000	„

55,000 men will hold the position.

It should be distinctly understood that this force is a minimum; knowing the difficulties that exist, or may exist, in obtaining a strong force to occupy these lines, the number of men actually required has been kept at the lowest figure. But it is believed that the position extending from the Sea of Marmora to the Black Sea, if properly entrenched, as here proposed, may with the aid of six gun-boats or steam launches on Lake Derkos be firmly held. The troops holding the Gallipoli Peninsula, and any troops that may be detailed for the defence of an advanced position in front of Kalliktatia must be additional to this number. The instructions under which this report is prepared deal entirely with a defensive position, a barrier to be raised between an army advancing from the west, and Constantinople. The number of men, 55,000 combatants stated above, supported by the works proposed, will afford such a barrier, and one that could only be forced by a siege *en règle*, which from the peculiar nature of the position would be an exceedingly long and difficult enterprise.

Reasons that have induced the reduction from 65,000 to 55,000 men.

In No. 1 Report, it was stated that a force of 65,000 men was requisite to hold this position, the difference (10,000 men) is the garrison of the Kalikratia position, which, as stated in Report No. 3, it is not considered necessary, or even desirable to occupy.

Redoubts.

The accompanying traces show the plans and sections of each of the 13 works referred to in this report. It will be observed that in several cases two or more works are classed together, as forming one work; this is done with the view of obtaining unity of command for important places. Each work or group of works indicated by a Roman numeral would form a distinct command.

Several works classed as one.

Principles adopted.

The principles upon which the works have been constructed, are as follows:—

1. To adapt them to the ground as closely as possible.
2. To use the top or crest of the hill as much as possible as a parados.
3. To so arrange, that every work shall be seen into and commanded by another in rear of it, or furnished with a redult or keep, so that the capture of the front line of parapet does not entail the loss of the work.
4. To place the guns on the natural ground, no attempts at forming ramparts have been made. To provide at least two platforms for each gun, so that its position when requisite may be altered. To provide traverses and blindages for a certain number of the more important works.

5. To leave wide berms so that the parapets may if requisite be strengthened.
6. To attempt no flank defence of the ditches. To look upon the ditches, less as an obstacle, than as a means for procuring earth to form the parapet.
7. To provide one magazine for every two or three guns, making the magazines small.
8. To provide drainage for the work, tanks for water, and in some cases a latrine inside the work.
9. To provide each work with a telegraph office, and a large telescope on a tripod.

Captain Fraser has adapted the whole of these works to the ground, and his labours in this respect will it is deemed be found most creditable to him.

Any remarks or observations on these works will, when received, be carefully attended to. Meantime, the whole of the works referred to have been picketed out, and work can be begun at once on them.

A complete detail of the timber requisite for each work is attached to it, and also an approximate statement of the number of cubic yards of excavation.

Minor works.

Emplacements for Field Artillery and Shelter Trenches, including minor works to connect the Main Redoubts.

Actual position must be determined by Generals commanding divisions.

These works are generally indicated on the plan that accompanies this report. With reference to their construction, should time be available, some, the more important, may be constructed before the army arrives. But the actual position of many of these minor works should be left to the decision and selection of the General Officers Commanding the Divisions, who would have them constructed by their Divisional Commanding Royal Engineer.

Best means of doing so.

The best means of doing so would be to deploy the troops on the lines, and, having done so, to have the front carefully reconnoitred by the Staff and Engineer Officer of the Division, from the enemy's position, and these officers, reasoning as if they were employed by the enemy, can best arrive at the true position of these works.

Actual execution.

With reference to their actual execution, the writer is well aware that His Royal Highness, the Commander-in-Chief, views pick-axe and shovel work as essentially the duty of the soldier.

He, however, ventures respectfully to submit that on the arrival of the army, the battalions raised to a war strength, either by volunteers from other corps, by Army Reserve, or Militia Reserve, will require a certain amount of steady drill to get consolidated, to enable the officers to know the men, and get accustomed to handle units of double the size they have been hitherto accustomed to. That it is discouraging to soldiers thrown ashore to be at once employed in intrenching a defensive position; their spirits and health are likely to suffer from this cause.

May be constructed by labourers of the country.

It is therefore submitted that a certain number of the best labourers, who have been employed on either the Railway or the main redoubts, should be retained. If 500 of these men, organized as they then will be, in gangs, are placed at the disposal of each of the Divisional Commanding Royal Engineers, these minor works may be constructed; after the completion, their maintenance would devolve on the troops. All that the writer begs respectfully to put forward is, that the troops should be got well in hand during the first fortnight after disembarkation, and he submits that this can be better and more speedily carried out by steady drill, whether in battalion or brigade, than by immediately employing them on the lines.

Obstacles.

Necessity for obstacles.

In the occupation and defence of a position similar to that now reported on, when the ground is generally clear and sloping for 3,000 to 4,000 yards from the defenders' position, every means should be adopted for detaining an enemy

under fire. The essence of the defence is a powerful fire over open ground, and the provision of some obstacle that shall prevent the enemy crossing that ground, except very slowly and with difficulty.

Their great importance.

Obstacles in front of such a line of works as here proposed, are of first-class importance, they really fulfil the functions of scarp and countrescarp in permanent works. Too much labour and care cannot be bestowed on them.

Obstacles at Buyuk-Checkmagee.

The Harbour of Buyuk-Checkmagee completely covers the extreme left of the line. The stream or channel which connects this harbour with the lake or backwater has a depth from 7 ft. to 2 ft. It should be deepened, which can be easily done by means of long handled-shovels. (The Turks continually do this for their own purposes.) A strong row of stakes should be driven into the sand; prior to driving these stakes they can be easily connected with wire, so as to form a wire entanglement under water. A row of fraises can be advantageously placed immediately under the existing bank, which here, as described, acts as a shelter trench or breast-work.

The bridge should be destroyed in at least four places, the centre arch of each distinct bridge being blown up.

A trench, some 8 ft. wide, 5 ft. deep, and a hundred yards long, should be dug between the bank already referred to and the channel; this will speedily fill with water.

The village must be burnt.

The village of Buyuk should be burnt, the wooden roofs and upper storeys of the houses being thus removed; the walls that are left may be loopholed and held. Of course the destruction of this village would be one of the last things to be undertaken.

Obstacles between No. I. and No. II. Redoubts.

From Buyuk-Checkmagee to Redoubt No. II. the lake affords, as has been said, a very considerable amount of protection. This may be greatly increased by staking portions of it with strong stakes driven into the sandy-bottom and entangled with wire. Cuts may also be made in the shallow water of the lake 60 or 70 yards from shore, which would retard troops greatly.

It is believed that the marsh that extends from the head of the lake to the railway bridge may be made nearly, if not quite, impassable at all seasons, by damming the water of the stream. A double line of wire entanglement and a line of fraises should be placed in front of No. II. Redoubt. The first line of entanglement should be at 600 yards, the second at 300 from the work.

Obstacles above the railway.

Above the railway, all bridges over the stream should be destroyed. It is not believed that much may be here done by damming the stream. As dams will cost little time or labour, they will be attempted; but there are two causes which lead to the belief that they will be of little use:—

1. The stream runs close to the enemy's position. A sapper or two sent down at night would easily cut the dams.

Inundations possible, but not likely to be useful.

2. The soil over all this position has one peculiarity—it does not, unless broken up by the plough or by the feet of cattle, seem to absorb water. The valleys are usually water-meadows, some in the main valley of great extent.* Over all these valleys, although they are now under water for irrigation, it is quite possible to ride at a rapid pace. Many places which in England a horseman would be afraid to cross are here perfectly safe and hard, although there may be 12 in. to 18 in. of water over them. As inundations such as we could hope to make would merely give a depth of a few inches, it is not conceived that they would be of much value.

Cuts may be made.

The stream may, however, be turned to account by deepening its channel in certain places, and by digging trenches some 5 ft. deep and 8 ft. wide parallel to it: these trenches can be filled with water from the stream, and will make formidable obstacles.

Wire entanglements and fraises the main obstacles.

At 700 yards from the works a line of wire entanglement should be formed, of great strength; this should be carried round the hills on which the works are situated, leaving the valleys open for the use of cavalry, as described. A second row of similar entanglement should be formed some 250 to 300 yards

* The Turkish Government rents a great portion of the taxes of the Sandjak in kind, and has, at the point indicated on the plan, large steam hay-pressing works.

from the parapets, and a belt between these two should be carefully staked. Every work should also be strongly fraised. Redoubts No. VII., No. IX., No. X., and No. XII. may be provided in addition with a strong abattis.

Strong hurdles may be used.

In certain places strong hurdles, which the natives use to surround their gardens, and which when 5 ft. to 7 ft. high are very formidable obstacles, should be used.

By adopting the proposed system of obstacles, the woods near Derkos may be utilized, and much of them can be cleared; while, at the same time, the clearing will afford stakes for the purposes named.

Stakes, how to be obtained.

The villages at the northern end of the lines are occupied by charcoal burners, who supply large quantities of charcoal for the Constantinople market. Several of these men have offered to supply large numbers of the stakes required at moderate rates. Beyond Tchataldja, on the Adrianople line of railway, about 20 miles to the westward, there are charcoal works on a large scale, and stakes may be obtained from them in large numbers. Mauls for driving them will be needed in large numbers, and will be found in the general demand for stores which accompanies this paper.

Wire to be supplied must be annealed.

In my Report No. 2 I detailed the local resources, so far as I could estimate them: I have since found no reason to alter my views. But, looking to the requirements of the service, a large quantity of wire (No. 12 and No. 14 B.W.G.) should be sent out. This wire should be annealed before it comes out. Wire unannealed was sent to the Gold Coast: it was useless. There is an absolute necessity that all such processes should be performed at home, so that articles may arrive ready for use.

Having now attempted to lay before you as clearly and distinctly as possible every detail connected with the proposed occupation of the position, it becomes desirable to draw attention to certain other matters. These form the subject of separate reports.

R. HOME, *Lieut.-Col. R.E.*

10th December 1876.

Inclosure 3 in No. 8.

B.

THE COMMUNICATIONS.

All the main roads intersect the position at right angles.

Constantinople, the capital city of the Turkish Empire, being situated at the eastern end of a peninsula, the roads leading from it westward must intersect the main position at right angles, that position being intended to cover the city from an enemy advancing from the westward.

Three roads only.

There are three roads that lead from Constantinople westward and intersect the position:—

Adrianople road.

1st. The main Adrianople road which leaves Constantinople and follows the coast line to some distance beyond Silivri. It passes the Harbour of Kutchuk-Checkmagee on a causeway, then ascends a steep hill, reaches some high ground (about 850 feet), and again descends to the Buyuk-Checkmagee. It skirts the coast for about 10 miles after leaving Silivri, and then diverges, proceeding *viâ* Tschorlu and Lüle Bergas to Adrianople. This road is the main road in Turkey; it proceeds for 600 miles from Constantinople to Belgrade. As far as Buyuk-Checkmagee it is an excellent, well-metalled road; the gradients are occasionally steep, but nowhere so steep as to render it perfectly practicable for heavily laden wagons. Beyond Buyuk-Checkmagee it is for some distance a mere track; between Silivri and Tschorlu portions of the road

Very good as far as Buyuk-Checkmagee.

A mere track, though a good one, beyond.

are metalled, but particularly between Silivri and Adrianople the road is not metalled or paved, although portions of the old Roman pavement exist here and there.

Constantinople, Tchataldjol-Wisa road, a mere track.

2nd. A road leads from Constantinople *viâ* Tchataldja Wisa and Kirk Kilissi on Adrianople. This is a mere track, although in places the old Roman paving and fine gothic arches exist. This road crosses the Kara Su stream in front of No. V. Redoubt, and close under the fire of that and No. IV. Redoubt. It is practicable for troops of all arms, but not more so than the adjacent country; indeed, the bad places are avoided by the arabas making a detour over the fields, or rather over the ploughed ground, for there are no fields in the English acceptation of that word.

Arabas avoid bad places by making detours.

Black Sea road.

3rd. The North Coast or Black Sea road. This leaves Constantinople by the north, skirts the Bosphorus, and is, as far as Therapia, a magnificent road; beyond that place it rapidly deteriorates, until it reaches the Black Sea as a mere track; there it turns north-west, skirts the sea at some little distance, crosses the outflow of Lake Derkos by a sheer bridge, and then proceeds *viâ* Midia to Burgas.

The railway.

4th. The railway which skirts the coast as far as Kutchuk-Checkmagee, and then proceeds *viâ* Tchataldja and Tschorlu to Adrianople.

Roads similar to down roads in England.

With the exception of the Buyuk-Checkmagee—Constantinople road, and that portion of the Black Sea, or Northern road, that skirts the Bosphorous, none of these roads would in England be dignified by any other appellation than that of tracks. They are exactly similar to the tracks that lead over the Aldershot country and Salisbury plain.

When the ruts are worn to too great a depth, or when the road is too soft, the traffic diverges to the right and left, and seeks firmer or easier ground; in places these roads thus become 300 to 500 yards wide.

Similar tracks between the villages.

Between the numerous villages which occur in this country there are similar tracks. The streams are usually crossed by rough stone bridges, composed of flat stones laid on piers.

Tracks follow the crest of the hills.

Transport, pack animals or arabas.

The tracks invariably follow the crests of the hills and ridges because the driest and hardest ground is there found. The only transport in use in the country is by pack animals (camels and horses), who convey large quantities of charcoal from the scrub forests to Constantinople, and arabas drawn by oxen or buffaloes. The rate of these vehicles is less than 2 miles an hour, and may be taken at 1¾ miles per hour.

If nothing is done to improve the communications, the same state of affairs that existed in the Crimea may be anticipated.

If redoubts as proposed were constructed and armed, and the troops placed in position behind them, the same state of affairs that existed during the Crimean War might be fairly anticipated, more especially as there are no materials for making or mending roads available. That is to say, the tracks would, under the pressure of heavy wagons, soon become quagmires.

Railway will only help Redoubts II., III., and IV.

Although the railway traverses the left section of the position, it will really only be of use to Redoubts No. II., III., and IV., and to the troops defending them.

Distance in fact greater than from Balaklava to the front.

The distance from the railway to the redoubts on the right of the position will be further than from the sea at Balaklava to the heights.

Necessity of taking such difficulties into early consideration.

It becomes requisite, therefore, to look this difficulty in the face.

Difficulties of this class only require to be foreseen to be removed. The danger is lest they be left to the last moment.

In summer tracks will suffice, but not in winter.

It has been already stated that the best places for forming the divisional or advanced store depôts are close to Hadem-keui and Jaserin. It is proposed to connect these places with a line of railway. Plans and sections of this line have been sent to England.

From May to September it is believed that the ordinary country tracks, improved by fascines*, would suffice, as the troops would not be concentrated,

* Fascines are proposed because they can be easily procured from the scrub forests near Derkos.

and the lines of supply, passing over a number of different roads, would not cut them up so much as if the whole traffic were to pass over one road. But at other seasons such means would not suffice.

Tramways must be made.

It is proposed, therefore, to lay tramways to be worked by horses or oxen. These tramways should be the same gauge as the railway, and as there are plenty of rails of the same pattern as those in use in this country available for such purposes, they should be used rather than light rails to be procured from England.

Tramways to be same gauge as railway, and made with same material.

As some of the curves on these tramways would be very sharp, it is proposed to reduce the wheel base of a certain number of the trucks on the Adrianople line. This, it has been ascertained, can be easily done. These tramways are shown on the sketch. One starts from Hadem-keui Store Depôt, and goes to No. V. Redoubt, sending a branch to Babanakkash.

Wheel base of certain trucks to be altered.

Another starts from the Hadem-keui—Jaserin line, about two miles from the northern terminus, and runs out to No. VIII. Redoubt, while the main tramway will start from the Jaserin Store Depôt, and follow the main or dividing ridge as far as No. XIII. Redoubt. Plans, sections, and a special report on these tramways will be sent hereafter.

Places where it is proposed to lay these tramways down.

Necessity of building store-depôts.

To avoid the terrible mud which invariably arises where much traffic exists, the Jaserin Store Depôt has been placed on what is the only really rocky portion of the position. A good firm bottom will thus be obtained without trouble.

At Hadem-keui there is no such advantageous place, and the road material for the roads in the store depôt must be brought from the Kutchuk-Checkmagee by rail.

It has been already stated in the general Report A on the defensive position that the internal communications of the Buyuk-Checkmagee—Derkos position are not good, but are susceptible of improvement.

Roads to be made so as to improve lateral communications for infantry only.

These improvements will consist of forming roads down the slopes of the hills at such places as they may be unseen from the front.

These to be made after the general officers commanding divisions have decided where they will place their reserves.

It is manifest that when the troops occupy the lines, one of the first duties of the Generals Commanding Divisions will be to determine on the positions where they will place their reserves; and from these places the roads must be made. There will be no difficulty in making them. In summer they will hardly be required; in winter they would be formed of a fascine causeway, being only intended for infantry to move over. The slopes of the hills will require zig-zag roads, cut down to enable the troops to move up and down without getting into disorder.

The foregoing arrangements will, it is believed, give every facility that it is possible to have, so far as communications are concerned.

R. HOME, *Lieut.-Colonel R.E.*

17th December 1876.

Inclosure 4 in No. 8.

C.

STORE DEPOTS:—MAKRA-KEUI, HADEM-KEUI, JASERIN.

Necessity of proper store depôts proved by reference to previous expeditions.

An examination of the large number of Blue Books about the Abyssinian and Crimean wars shows that one great cause of expense was the demurrage charged by the owners of store ships that were kept at anchor with the stores on board them, because either there were no means of landing these stores, or no shelter for them when landed. It is believed that one cause of the

economical way in which the Ashanti Expedition was carried out, was the fact that storehouses were always ready for the stores before the stores were ready to land, thus there was little or no demurrage.

Want of proper stores causes enormous claims for demurrage.

A storehouse hired on shore is always much cheaper than a storehouse hired afloat. Stores are much easier to get at when placed in storehouses ashore than when kept in the holds of ships. A ship must be loaded on certain principles, she must have her weight adjusted for nautical reasons, rather than for convenience in getting at her stores, in the order in which they are likely to be required. Hence it would appear that one of the first requisites for the economical and efficient working of a British expedition is the construction of proper store depôts.

Ships and land storehouses must be stowed according to nautical ideas.

In the Report No. 5, it was stated that it was proposed to construct six wharves at Makra-keui, to place the main store depôt at that place, to run rails out to the wharves, and place the whole in connection with the Adrianople line of railway, so that any stores might at once be sent by rail to the advanced depôts at Hadem-keui and Jaserin. So soon as an officer is available, complete designs will be prepared for this purpose. Meantime, everything is sufficiently advanced to begin the work at once. By constructing the six wharves and using the existing two wharves, 16 ships may be unloaded at one time; further, two vessels, each of 1,500 tons, may be berthed close to the terminus of the Adrianople line in the Golden Horn.

Efficiency and economy both desired, good store accommodation absolutely requisite.

Reserve store depôt to be at Makra-keui, in connection with the sea and railway.

At least four moveable cranes mounted on trucks with a 4-ft. 8½-in. gauge, will be required at Makra-keui, and four fixed cranes, similar to those in use at Portland stone quarries.

Moveable cranes on narrow gauge trucks requisite.

Portland cranes also requisite.

It is difficult to arrive at a clear idea of the quantity of store accommodation required; but, having carefully calculated the amount of the reserve ammunition, other than that in charge of the Royal Artillery, the reserve hospital stores, reserve engineer stores, reserve camp equipment, reserve carriages, reserve supplies of flour, biscuit, preserved meat, rum, corn, hay, &c., it would appear that not less than 2¼ million cubic feet of store accommodation for a three months' reserve will be required. The cost of this accommodation at the moderate figure of 2*d.* per foot would be about 18,000*l.* The demurrage of a very small number of steamers would soon amount to this sum. A certain proportion of store accommodation may be hired or procured on the spot, but a very large quantity must be built. Looking to the fact that a considerable quantity of the stores, and perhaps the more bulky articles, such as wagons, gun carriages, pork barrels, rum barrels, &c., may be left in the open and covered with tarpaulins, it is believed that the actual amount of store accommodation may be reduced to 1¼ millions of cubic feet. Of this quantity perhaps ¼ million may be hired or obtained, but at least 1 million must be constructed, which will cost some 8,000*l.* This accommodation it is proposed to construct, partly of daub and wattle walls with tile roofs, partly of wooden huts with zinc roofs, and partly of the corrugated iron huts already referred to in No. 2 Report as being desirable to obtain from England. At Hadem-keui and Jaserin, store depôts to contain 500,000 cubic feet will be required; these may be partly hired, but must chiefly be constructed; it is proposed to make them of wooden huts, with felt roofs, the latter to be procured from England. The abattoirs and bakeries it is proposed to place at Hadem-keui and Jaserin. Accommodation for a certain proportion of the Army Service Corps, offices, and issuing stores, will also be provided. The writer believes that a small outlay on these matters will add enormously to the economy of the Expedition, and he begs to call attention to the sums paid for demurrage during the Abyssinian War.

Possible reductions.

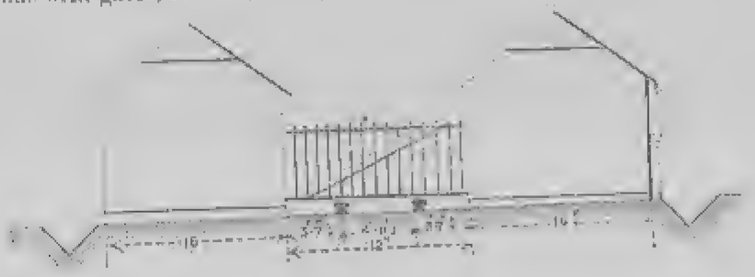
Probable cost.

Store accommodation at advanced depôts.

Abattoirs and bakeries.

With the view of reducing the cost of these storehouses, it is proposed to make the stores facing one another, with the backs to the prevailing winds (north and south), and run the rails between the stores, on the open sides, closing the ends with gates, somewhat in the manner of the following rough sketch.

General description of storehouses.



Horses will be employed to move the wagons about, and make the trains up, outside the store depôt. Except for special stores no floors will be required, drains being formed to carry off the water, and a rough grillage or hurdles being laid on the ground to keep the stores dry.

Horses, not engines, to be employed in the depôt.

Stores of all kinds, the writer believes, may be thus stored with security, examined with ease, and issued, when required, with despatch. The number of men employed about the stores may be thus reduced, a control kept over the issues, and the chances of fire from hangers-on, loafers, and other people who always congregate about a store depôt, largely reduced.

Proper control may thus be maintained.

At Makra-keui there are excavations in the ground 20 to 40 feet deep, perfectly dry, being excavated in a porous soil; it is proposed to make use of five or six of these excavations as magazines, placing a light roof over them. In case of explosion the whole effect would be upwards, and no damage would accrue to stores or magazines in the neighbourhood. A wire fence will be run round the whole enclosure. Light guérites or flanking tambours should be run out at the angles, so that a very small number of sentries would protect the whole. By these means an efficient store depôt will be made. The moment an officer is available plans will be prepared, showing the whole arrangements, and submitted to the Inspector-General of Fortifications.

Proposed ammunition store or powder magazine.

Fences and enclosures.

R. HOME,
Lieut.-Colonel, R.E.

17*th December* 1876.

Inclosure 5 in No. 8.

D.

I.—TELEGRAPHS AND OBSERVATORIES

It is requisite to establish three fixed visual signal stations:—

1. At Buyuk-Checkmagee to communicate with the ships.
2. At Makra-keui for the same object.
3. At Kara Burnu for the same object.

Three fixed signal stations requisite to communicate with the ships.

These should be provided with large signal shutters, solidly made, and with a complete set of apparatus for working at night. A small hut will be constructed for a non-commissioned officer and three men, who should be in charge of each station. These men should be well-trained and accustomed to read distant signals. The apparatus for each station should include a railway guard's watch. This is mentioned as none were sent to the Gold Coast. Each signal station will also be a telegraph station, to communicate the messages at once, without delay.

Well-trained signallers are requisite.

It is not proposed to use signals for any other purpose than communicating with the ships. The time they take to work, the number of men they require to work them, and their uncertainty in the foggy or wet weather that may be expected renders them an undesirable means of communicating intelligence.

Signals not advisable for general use in the lines.

It has been said that the main defect of the Buyuk-Checkmagee—Derkos position is the difficulty of the internal communication. To remove this difficulty has caused much anxious consideration, and the writer conceives that the best means for mitigating this evil is by introducing as complete and perfect a system for communicating information as can possibly be done.

Best means to remedy defective internal communication, a good system of telegraphs.

The redoubts will be armed with long-range weapons remarkable for their accuracy. Careful and accurate shooting may be attained by watching each shot, not so much from the redoubt from which it is fired as from one of the others.

One large powerful telescope mounted on a tripod requisite for each redoubt.

It is proposed to have for each redoubt a large telescope, mounted on a tripod stand; those used by the C Troop, Royal Engineers, are excellent. This telescope and a careful observer should be placed either in each redoubt, or a little to one side of it, or in rear of it. If not in the redoubt it should communicate with it by a short telegraph wire and a small sounder. A continual watch should be kept on the enemy's position, especially from No. IX. Redoubt, and every movement of his force should be telegraphed. As No. IX. Redoubt sees all the ground near Issedin, where an enemy could mass his troops to attack the centre (although the range is too long to fire at him), every movement will be known all along the front, and hence there will be far less chance of troops being needlessly moved to meet false attacks. Each redoubt should have a telegraph station, and the redoubts belonging to the right, centre, and left should be in communication with the points selected as head-quarters for the right, centre, and left. These points themselves should be in communication with the store depôts at Jaserin and Hadem-keui, and also with the army head-quarters, which it is proposed to place at Kutchuk-Checkmagee. The store depôts at Jaserin and Hadem-keui should also be in communication with the reserve depôt at Makra-keui. A line will also be required from No. XIII. Redoubt to Jaserin to work the tramway; and another from Jaserin to Hadem-keui to work the railway.

No. IX. Redoubt a most important observatory.

Telegraph communication requisite with head-quarters of each section, the store depôts and army head-quarters.

There are at present four distinct lines of telegraph.

Existing telegraphs. Proposed use of wires on Adrianople line.

1. Six wires on the Adrianople line. By putting the Buyuk redoubt in communication with one of the wires, an alternate means of communication with Constantinople, or with the right of the line, *via* No. 4 telegraph, or the Derkos line, will be obtained.

Railway line.

2. A wire along the railway for railway purposes.

Second group of wires along railway. Proposed use.

3. Five wires along the railway. These five wires it is proposed to utilize as follows:—

1st wire to Kara Aghatch, to carry news from the left of the line, *via* Hadem-keui to Kutchuk-Checkmagee and Makra-keui.

2nd wire to carry news from Babanakkash to Hadem Keui, Makra-keui, and Kutchuk-Checkmagee.

3rd wire to Delijunis, *via* Jaserin—Hadem-keui to Makra-keui and Kutchuk-Checkmagee.

4th wire to carry news from Hadem-keui to Makra-keui.

5th wire to carry news from Jaserin to Makra-keui.

The first wire will take all news from No. I., II., and III. Redoubts, Kara Aghatch being the focus.

The second wire will carry news from IV., V., VI., VII., and VIII., Babanakkash being the focus.

The third wire will carry from IX., X., XI., XII., XIII., Redoubts and the Derkos work, Delijunis being the focus.

Further, it is proposed to connect each redoubt with its neighbour directly.

Black Sea line.

4. Two wires run along the coast of the Black Sea and cross the Derkos Spit. It is proposed to connect the work on the Derkos Spit with one of these wires.

Thus, each redoubt can communicate with its neighbour directly, *vid* its head-quarters, *via* Kutchuk-Checkmagee, the army head-quarters, or *vid* Constantinople.

By these means it is conceived that all risk of an interrupted communication will be avoided, while at the same time three wires only are brought into each redoubt, or into its immediate vicinity, any one of which remaining good will complete the whole circuit.

These wires will be exposed to fire, but as the redoubts are all situated on hills, having slopes concealed from the enemy, a little arrangement will it is believed conceal the greater portion of the wires from an enemy. If hit by accident they can easily be made good. And it not likely that all three wires at any one redoubt will be cut the same day.

Offices requisite.

The following offices will therefore be requisite:—

Redoubts..	13
Derkos Spit	1
Kara Aghatch	1
Babanakkash	1
Delijunis..	1
Jaserin	1
Hadem-keui	1
Makra-keui	1
Kutchuk-Checkmagee	1
	21

The whole apparatus for these offices and nine spare sets, or apparatus for 30 offices will be required. Three of the spare sets may be made available for the visual signal stations already referred to.

A detail of the wire available now in this country, and the number of insulators that can be procured, was given in Report No. 2. But as it is proposed to use wire very freely for entanglements it is desirable to have a large supply sent to this country. This will be detailed in the list of stores. Poles it is believed can be easily procured.

R. HOME,
Lieut.-Colonel, R.E.

December 17th, 1876.

Inclosure 6 in No. 8.

E.

REPORT ON THE QUARTERING OF TROOPS FOR THE DEFENCE OF THE BUYUK-CHECKMAGEE—DERKOS LINE.

Report $\frac{E}{5}$. The quartering of the troops for the defence of the Buyuk-Checkmagee—Derkos line.

Division of line into three portions, as pointed out in report $\frac{A}{5}$.

In Report $\frac{A}{5}$ the whole line was divided into three sections:—

1. The Sea of Marmora to the Railway.
2. The railway to Urzunlu.
3. Urzunlu, to the Black Sea.

Force requisite to defend the lines.

The force requisite to defend these sections were:—

For the first	15,000 men
For the second	20,000 „
For the third, including the Derkos Spit ..	20,000 „
Total ..	55,000

Instructions vague as to force for defence of lines.

In the instructions under which these reports are prepared, the number of men that can be sent from England is not stated, but reference is made to the fact that the troops which may be employed in its defence may be limited in number.

Difficulty in preparing a statement of how the lines should be occupied, so long as force is uncertain.

The instructions also direct that a tabular statement of the troops required should be prepared, showing the actual garrisons, and the reserves. Now there is considerable difficulty in doing this, as the composition of the force is unknown. To defend the Gallipoli lines, and the Buyuk Checkmagee—Derkos lines would require 70,000 men—viz., 15,000 for the former, and 55,000 for the latter.

Assumption as to the strength of force.

Assuming that the maximum force that would be sent from England would be a Corps as laid down in Army Circulars, 1875, together with one Division, or a total force of 47,000 men, 40,000 combatants, and 7,000 non-combatants, it would appear that the English troops might be detailed as follows:—

	English Troops.	Auxiliaries.
Gallipoli	10,000	5,000
Buyuk-Derkos—		
1st Section	10,000	5,000
2nd Section	10,000	10,000
3rd Section	10,000	10,000
Total	40,000	30,000
	70,000	

Nature of auxiliary force unknown.

Its formation unknown.

Before any exact ideas can be arrived at, as to how the lines should be occupied, the nature of the auxiliary force should be known. Is it to be composed of Turkish troops? or of Turkish troops officered by English, and paid by England? or is it to be composed of Anglo-Indian troops? How is it to be attached to the British force; is it to be brigaded with the British battalions, or are the divisions to be formed of British and auxiliary brigades? or are the auxiliary troops to form a corps by themselves? Upon these points there is no information whatever, and without this information it is manifestly impossible to determine how the lines should be occupied by their defenders.

Method adopted in the Peninsular war.

Looking at the method adopted in the Peninsula war, where the circumstances of British troops acting with auxiliaries were somewhat similar, it will be found that except in special cases, Portugese battalions were not brigaded with British troops.

Not desirable to brigade auxiliary troops with British battalions.

Viewing the habits and customs of Mahometans, their food, &c., it is desirable that they should be formed in separate brigades, but that to avoid too large a front being intrusted to auxiliary troops, no body of auxiliaries should be larger than a brigade.

Desirable to preserve formation of British force.

This may be done by expanding 4 British divisions into 4 corps.

Garrison artillery requisite to work guns of position.

The following proposal is respectfully submitted for forming the troops sent from England, and the auxiliaries in such a manner that the Peninsular custom may be observed, and also that some definite idea as to the quartering of the troops may be arrived at. The idea being that the four Divisions sent from England, formed in accordance with Army Circular, August 1875, may, with little dislocation, have a certain number of auxiliaries grafted on them, each Division in such a case becoming an Army Corps, and the General in chief command having under him four corps, two of about 15,000 men, and two of about 22,000. Thus assigning a force of about 10,000 British troops or an English Division to Gallipoli, and each of the three sections of the Buyuk—Derkos line. A certain proportion of garrison artillery will be required to work the guns of position there, and the substitution of companies of engineers for the pontoon train will be the sole alteration from the Army Circular of August 1875.

The organization of the force not the province of writer, but requisite to assume something to make a detail of force.

It is hoped that His Royal Highness will pardon what must at first sight appear to be an unwarrantable departure from instructions, but it is believed that some such assumption as that here made is requisite in order that the question of quartering the troops may be dealt with, the numbers to be dealt with forming a very important part of the question, indeed, unless some such assumption as to numbers be made, it would appear hardly possible to deal with the question at all.

Proposed formation.

Proposed formation submitted:—

1st (Gallipoli) Corps.

1st Corps.—Destined to defend Gallipoli lines:—

British Troops.		
2 brigades of Infantry		6,582
1 battalion of Rifles		1,097
1 regiment of Cavalry		653
4 field batteries		756
2 garrison batteries		300
1 company of Engineers		191
1 Ammunition Column		212
Total British		9,791
Auxiliaries, 2 brigades	4,200	
1 Rifle battalion	700	
Total		4,900
Total 1st Corps		14,691

2nd Corps. Buyuk to railway.

2nd Corps.—Destined for the defence of the line from Buyuk to the railway, to be precisely similar.

3rd Corps. From the railway to Urzunlu.

3rd Corps.—Destined for the defence of the line from the Railway to Urzunlu, to be formed in two Divisions:—

British Troops:—	1st Division.		
1 brigade	3,291		
1 battalion of Rifles	1,097		
2 field batteries	378		
2 garrison batteries	300		
1 company of Engineers ..	191		
Total British		.. ..	5,257
2 brigades of Auxiliary troops ..		4,200	
1 battalion of Rifles		700	
Total Auxiliaries		.. ..	4,900
Total 1st Division		.. ..	10,157
2nd Division		.. ..	10,157
1 Cavalry regiment (British)		.. ..	653
1 battery of Artillery		.. ..	189
1 Ammunition Reserve		.. ..	212
Total 3rd Corps..		.. ..	21,368
British Troops		11,568	
Auxiliary Troops		9,800	
Total		21,368	

4th Corps. From Urzunlu to Black Sea.

4th Corps.—Destined to defend the line from Urzunlu to the Black Sea, to be the same.

RECAPITULATION.

	British.	Auxiliary.
1st Corps..	9,791	4,900
2nd "	9,791	4,900
3rd "	11,568	9,800
4th "	11,568	9,800
Cavalry Brigade..	2,148	..
Corps Ammunition Reserve ..	534	..
Total	45,400	29,400
	74,800	

Detail of British force

Of these numbers there would be:—

British Infantry, 30 battalions			32,910
" Cavalry, 7 regiments			4,571
" Artillery:—			
19 batteries (Field and Horse)		3,591	
12 " garrison "		1,806	
1 Ammunition Reserve ..	848		
Corps Reserve	534		
		1,382	
Total Artillery			6,779
6 companies of Engineers			1,146
Total			45,400

Comparison of British force with 1 Army Corps and 1 Division, as laid down in Army Circular.

The corresponding numbers for an Army Corps and a Division would be :—

28 battalions of Infantry			30,716
7 regiments of Cavalry			4,571
18 batteries of Artillery (Field and Horse)		3,420	
Ammunition Reserves		1,382	
Total Artillery			4,802
4 companies of Royal Engineers	764		
2 troops of "	471		
Total Royal Engineers			1,195
Total			41,284

Difference slight.

The difference being :—

2 battalions of Infantry	2,194
1 battery of Field Artillery	190
12 batteries of Garrison Artillery	1,800
Total	4,184

Organization of Army Corps as laid down not interfered with.

It is manifest from the figures that the organization is not touched, the 12 batteries of garrison Artillery are absolutely requisite for the guns of position, and the two battalions of Infantry would form the depôt guard if the army quitting its lines were to advance into the country. If the army has to take up its position behind the lines before the end of April, it cannot be encamped without injury to the mens' health; after that date, the canvas encampment may be made very healthy and comfortable. But before that date, either huts must be built, or the houses of the villages used.

After April troops may be encamped; before April must be in houses and huts.

Auxiliary troops may hut themselves.

If the auxiliary troops be Turks, fed and paid by England, they will hut themselves very quickly, and so long as they get their food and pay will require no further attention. Mahometan troops from India would require far more care. Dealing only at first with the English troops, it appears that the first section of the lines—viz., that from Buyuk to the Railway is guarded by 14,702 men, of whom 9,802 are British. One-seventh of the entire force may be looked on as a *garrison de sûreté*, and should be on duty in the works—for this number (or 2,200) huts must be provided—leaving a force of 7,600 to be provided for.

One-seventh of the force must be a "*garrison de sûreté*" at all times.

In the rayon of this portion of the lines there are many villages.

Villages very good.

The houses are exceedingly good, and a little care and arrangement alone is wanted to make the troops very comfortable.

The 2nd Corps can then be put up as follows :—

How it is proposed to quarter the 2nd Corps.

Auxiliary troops in huts of their own construction.
British troops.—2,200 men in huts built for them.

3,000 "	Buyuk-Checkmagee.
3,000 "	Kalikratia.
500 "	Kara Aghatch.
750 "	Baghtcha-ish.
550 "	Pinja.
9,800	

The Cavalry regiment will find excellent accommodation in the Esskidshi, Aktcha, and Sitia Tchiftliks, where accommodation for 600 horses can be procured. The stables and outhouses of the other villages, especially the Tatar village of Baghtcha-ish will accommodate the remainder of the horses.

It is not contemplated to turn out the villagers entirely, but merely to quarter a certain number of men in each house, previously whitewashing the house.

How it is proposed to quarter the 3rd Corps.

In the centre, 11,568 British and 9,800 auxiliary troops have to be disposed of. The latter may be allowed to hut themselves. The former may be put up as follows :—

In huts to be built near the Redoubts ..	3,000
Babamikkash	1,400
Jaserin	500
Kisailyaly	120
Izzedin	200
Tchiaklja	6,000
Total	11,200

Tozaluk-Tchiftlik will take about 200 more.

The stables and outhouses, in the villages named, will afford ample accommodation for the horses of the Cavalry regiments and Artillery.

How it is proposed to quarter the 4th Corps.

The troops to defend the section from the village of Urzunlu to the sea may be put up as follows :—Auxiliary troops, 9,800, to hut themselves; there will be no difficulty in doing this as the large scrub forest affords ample means.

The 11,568 British may be put up as follows :—

In huts to be built	3,000
Deljunis	400
Urzunlu	400
Kastanlik	1,500
Tchiaklcha	1,500
Derkos	1,000
Kara Burnu	500
Jeni Keui	500
Oklaly	1,200
Lazuri Keui	1,000
Tursu Keui	400
Total	11,400

There is ample accommodation for the horses in the stables and out-buildings.

Blankets for horses are requisite.

By these arrangements it is believed that the whole British force for the defence of the Buyuk Derkos line can be housed until it can be moved into tents.

It is desirable to draw attention here to the fact that not only are horses invariably, even in the hot country stables, blanketed, but the bullocks and buffaloes also. Hence, if a British force is sent to this country before the end of April blankets for the horses would seem to be an absolute necessity.

Cavalry and horse artillery would probably be sent to the front at first.

Provision has been made in the numbers given for the Cavalry other than the Cavalry Brigade, but it is quite conceivable that the circumstances attending on the occupation of these lines may induce the General in command to push all his Cavalry and Horse Artillery to the front, and cover the front of the Army as far to the westward as Lüle Bergas and Wisa. Should this be done, ample accommodation for the whole force may be found at those towns and the adjacent villages.

Water supply good.

As regards water supply, there is in the villages named an ample supply of water from wells, and the small streams, which are very frequent, are always full until the middle or end of May, when they begin to dry up rapidly.

Fever and ague common complaints in the valley of the Kara Su river.

The best sites for the canvas camps are undoubtedly on the unbroken down grass, which is on the tops of the hills, rather than on the cultivated ground in the bottoms of the valleys. It would be natural to expect fever, and perhaps cholera, were the troops to be encamped on ploughed ground in the bottoms of the valleys. So far as can be learned, fever and ague are common complaints all along the valley of the Kara Su, especially below the village of Izzedin, the villages on the west side, about Kastanlik, being very free from it. Hence it would appear that the most healthy sites for camps would be on the slopes of the spurs on which the redoubts stand, or on the main ridge at the back of them. The high ridge that extends from near Hadem Keui Station to Jaserin, and on the eastern slope of which the proposed railway runs, appears to offer an excellent site for encamping the force forming the centre. The stream which runs in the hollow is said to be always full of water, it is deeper than most of the streams in the neighbourhood, and, with the exception of some small patches, the turf has not been broken up.

Most healthy site for canvas camps.

The centre.

The right.

The force defending the right may be encamped on high ground on the hills in rear of the long spur running north from Urzunlu, and on the high ground between Jaserin and Delijanis. The whole of these camps will be intersected by the proposed tramway, and there will be no difficulties as regards supply.

The left.

On the left the main force should be encamped on the ground above Kara Aghatch, and a smaller force, perhaps 2,000 to 3,000 men, on the hills above Buyuk Checkmagee. So far as elevation, site, exposure, soil, &c., these places leave nothing to be desired; but it is evident that if troops are encamped on heights to avoid fever and ague, they will have some difficulty in reaching the water in the valleys below, and the old difficulty that has to be contended against in England during autumn manœuvres is again reproduced here. It is quite evident that the method adopted in England of getting over the difficulty by using water carts, can be only sparingly used, if at all, in the field.

Difficulties of getting water to the troops.

There remain but two expedients:—

Two methods:—

1st. To pump the water up by means of steam engines and force pumps.

Pumping.

2nd. To let the men fetch it themselves.

Troops fetching their own water.

Having given this question much thought, the writer is disposed to recommend both measures being to a certain extent adopted.

In the centre they may fetch their water. On the right and left should be pumped.

Thus, if the force to defend the centre be supposed to be encamped parallel to the proposed railway, with the front of the camp looking west, the kitchens would not be more than 280 to 350 yards from the stream, a distance by no means too great to prevent the men fetching their own water. Not so on the right and left flanks, and there it would be requisite to adopt some other means—and these means must be force pumps and piping similar to the system adopted in 1872 at Blandford, when a force, much in excess of the British force on either flank of the Buyuk—Derkos position, were supplied easily with water by these means.

Encampment of auxiliaries.

The measures here proposed relate entirely to the British troops. The auxiliary troops, whether Indians or Turks, should be encamped on the other slope of the hill, close to the stream in the valley. By this arrangement the source of water supply used by the British and these auxiliaries will be quite different. A plan will be prepared so soon as lithographs are obtained from England showing all the details.

Camps may be shifted in summer, but it will probably be undesirable.

If the troops occupy these lines for any length of time, and their health is found to continue good, as the summer advances and the heat of the weather gets great, an attempt might, perhaps, be made to place the troops on lower ground, where they might be less exposed to the sun, but it is considered that the difficulties of finding ground not covered with standing corn will be very great.

Attached is a table of statistics of the various villages, which is as complete as it could be made, but there is difficulty in getting information, as the people always imagine that some tax is to be imposed upon them. The whole of the district is very rich indeed. There are thousands of sheep, and large herds of cattle and horses grazing everywhere. The difficulties that would be met as regards supplies would be, perhaps, the following:—

Supply.

Flour.

1. Wheat, not flour, could be procured. It is a curious fact, that wheat grown in Bulgaria and Roumelia goes to England to be ground, and comes out again as flour to be eaten in Constantinople. Almost every village has one or more wind-mills, and there are a few small water-mills on the Kara Su, but there are not more than enough for the wants of the people. It becomes a question, therefore, whether some sort of mills, to be driven by steam power, should not be brought from England. Of course such mills could not separate the bran from the flour, but there would appear to be no reason, but quite the contrary, why the soldiers should not eat bread under such circumstances made of whole flour.

Hay and straw.

2. Hay is a rare article here; it is difficult to get, and, although large quantities are produced in the Kara Su water meadows, yet the quantity would be soon exhausted. Chopped straw is the winter food for cattle, and horses get little else but that and barley. Straw is an article not to be bought except in its chopped state, and the soldiers would suffer much from having no straw

in their tents. For this reason waterproof sheets, to be issued only when the men were in standing camp behind the lines, should accompany the force.

Waterproof sheets desirable.

The writer is perfectly aware that it is hopeless to expect to carry such sheets, or even tents in the field, but he submits that an army encamped behind lines, where it must always be, more or less, in an expectant attitude, where it is needless for it to move, and where its camps are intersected by a railway, occupies a different position, and that the supply of waterproof sheets in lieu of straw to the men will be a good arrangement.

Ovens will be required at the Divisional depôts, Jaserin and Hadem-keui only.

Bread.

Bread may also be made at Makra-keui and sent out by railway.

There is an ample supply of fuel for the whole force in the scrub woods near Derkos, but care should be taken to get possession of the whole as rapidly as possible.

R. HOME, R.E.,
Lieut. Colonel.

BOULAIR.
January 6th, 1877.

STATISTICS OF VILLAGES.

Name of Village.	Nationality.	Inhabited Houses.	Probable number of armed fellahs, boys other than boys.	Population.	Oxen and Buffaloes.	Cows.	Horses.	Average Yield of Wheat.	Barley.	Indian Corn.	Hay.	Antes.	Manufactures.	Occupation of Inhabitants.	Remarks.
								kilos.	kilos.	kilos.	kilos.				
Kastanlik ..	Greek ..	120	100	600	300	Large herd, at least 80	80	4,000	2,000	2,000	30,000	50	Tiles, Tobacco, Wine.	Agricultural	Great corn-grinding village; 6 mills, 4 water-mills. Village trees large and good.
Ürüntu ..	Turk ..	30	25	120	100	2	2	4,000	2,000	2,000	30,000	50	.. ..	"	
Kyssikyaly ..	Greek ..	12	12	50	70	..	18	1,000	Average, 1,000	600	30,000	50	.. ..	"	
Tchamlitcha ..	Greek ..	100	80	500	800	..	70						.. ..	"	
Oklaly ..	.. ..	20	40	360	2	..	2						Tobacco, Wine ..	"	
Jenikeui ..	Turk ..	27	15	120	80	..	Very few						.. ..	"	
Izmeri-Keui ..	Greek ..	50	80	250	Small herd	..	Very few						.. ..	"	
Saka-Keui ..	Turk ..	35	30	220	2	2	2						.. ..	"	
Inserin ..	.. ..	50	30	250	50	100	100	600	600	600	12,000	50	Charcoal-burning and basket-making.	Charcoal burning Agricultural	
Tusen-Keui ..	.. ..	30	20	200	50	50	80	600	600	..	12,000	54	Manufacture of Arabas.	Carriers.	
Delijunis ..	Bulgarian	40	25	300	30	10	30	4,000	2,000	Small	Very small	30	.. ..	Carriers, &c.	
Dergos ..	.. ..	80	40	400	40	20	15	5,000	2,000	Small	"	60	Fish-curing	Fishermen	Average yield—80,000 okp of dried fish.
Mandra ..	Greek ..	6	4	20	..	..	..						.. ..	Agricultural and fishing.	
Izzedin ..	Turk ..	20	15	80	..	..	..						.. ..	"	Trees large and good.
Dejirk-Tchukundje ..	..	300	..	1,250	250	..	..						.. ..	"	
Kiderkralis ..	Greek ..	245	..	1,000	100	..	..						.. ..	Agricultural.	
Ahmet-Keui ..	.. ..	10	..	50	12	..	..						.. ..	"	
Tchoplicla ..	.. ..	30	20	150	20	..	..						.. ..	"	
Kara-Aghatch ..	Turk ..	35	25	175	40	..	..						.. ..	"	
Plaja ..	Greek ..	25	31	125	20	..	..						.. ..	Fishing and agriculturel.	
Papas Burgas ..	.. ..	50	30	250	80	75	Many						.. ..	"	
Bahadekkeuh ..	Turk ..	140	70	700	95	90	..						.. ..	Agricultural.	
Bagbi Caush ..	Tartar ..	100	100	500	40	20	..						.. ..	"	
Tchatalija ..	Turk ..	400	200	2,000	450	250	Many						.. ..	Horses-breeding. Agricultural.	

Very considerable areas under cultivation. Actual quantity could not be ascertained.

Inclosure 7 in No. 8.

F.

REPORT ON THE DEFENSIVE POSITION EXTENDING FROM THE SEA OF MARMORA TO THE BLACK SEA, FROM A HOSTILE POINT OF VIEW.

In a memorandum on the Russian invasion of Turkey* which accompanied Report No. 1, it was stated that this operation would not be attempted with less than 250,000 men. Eight Russian army-corps have been mobilised for the purpose. These corps are at present either cantoned in an arc of a circle extending from Akerman by Bender, Kischenev, Moghilev and Chotin, or moving up to these positions. Large bodies of men are concentrating at Balta, Razdelnaja and Odessa in second line. When Russia does invade Turkey it is exceedingly probable she will cross the Pruth at Seuliani and Falschi, with columns moving from Kischenev and Moghilev. That the troops from Odessa and Akerman will move through that portion of Besserabia that was ceded in 1856, and attempt to pass the Danube at Toultscha or Galatz, or both places.

Position of Russian army at present.

One column will cross probably into the Dobrudscha

It is not likely that the passage of the Danube will be attempted at these points until the 1st and 2nd columns have reached Foksani and Tecuci.

But it is exceedingly likely that the seizure and occupation of Galatz will be one of the earliest events of the war. There are two reasons for thinking this: 1st, the Russians have assembled a large mass of cavalry at or near Akerman; 2nd, it is absolutely requisite to protect and cover the railway between Galatz and Ibraila, which skirts the Danube, and which thus skirts the Turkish frontier also.

Galatz will be occupied early in the war.

Reasons why railway must be protected.

Since his arrival in this country the writer has not failed, both privately and officially, to call attention to the desirability of destroying the bridges on the Roumanian lines of railway, and he believes that the Turkish authorities are equally well aware of the desirability of these demolitions; but he considers it very doubtful if anything has been done.

The political state of Roumania is very peculiar; she wants to be neutral, but Russia cannot get at Turkey, except through Roumania. This country will, it is believed, declare her neutrality, her inability, to oppose Russia, and do nothing. If she could be induced to run all her rolling-stock west of Krajova, and keep it there, every purpose would be served. The Roumanian Army, some 50,000 men, probably is of so little military value, and the inclinations and wishes of the people are so hostile to both sides, Turks and Russians, that their value as allies to either side is very doubtful.

Position of Roumania.

Roumanian army of little value.

As yet no information has been obtained as to the amount of the rolling-stock, or where it is kept.

With regard to the statement that Russia has provided herself with an arrangement for running her rolling-stock on these railways, the writer is inclined to think that there is some such arrangement, and he founds his belief on the statement recently made to him by a person who professed to be well acquainted with the Odessa trade, that large numbers of 4 ft. 8½ in. wheels and axles had been sent to Russia. These, of course, could be substituted for the 5-ft. axles —the same axle boxes serving both. If not for this purpose, why should Russia purchase 4 ft. 8½ in. axles?†

The writer has not been placed in communication with any Turkish military authorities; his position in this country is that of a simple traveller. For many reasons it is desirable that this should continue, but while this is the case, he

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* European Turkey alone is here referred to.

† Since this was written conclusive information has been obtained, that at a recent date 200 wagons, with telescopic axles, existed in Russia, and that the rolling stock of the Polish railways, 4 ft. 8½ in. gauge, may be passed on to the Roumanian lines via Lemberg, in Galicia.

Position and strength of Turkish army.

has tried, as a traveller desirous of studying the country he happened to be in, to ascertain how and where the Turkish Army is posted. The following is given on the authority of a Turkish officer on the general staff, but its truth is exceedingly doubtful :—

Schumla, Pravadi and Varna	..	150,000	.. *90,000*
Widdin		18,000	.. *8,000*
Rutschuk		18,000	.. *8,000*
Silistria		18,000	.. *8,000*
Toultscha		18,000	.. *10,000*
Nissa		30,000	.. *30,000*
Sophia		15,000	.. *10,000*
Erzeroum		15,000	.. *10,000*
Kars		15,000	.. *5,000*
Total		207,000	.. *179,000*

The *italic* figures denote what is conceived may be fairly put as the proper figures; in addition to these figures there are, in all probability, about 200,000 police, Circassians, Bashi Bazouks, &c.

Danubian fortresses useless.

Troops holding the Danubian fortresses are simply wasted. The Turks dwell on the memories of 1828-29-53-54, and appear determined to hold these fortresses, forgetting that although railways and improved arms have added greatly to the power of the attack, the works are what they ever have been,

Doubtful if Turkey will accept English advice without an armed intervention.

It is exceedingly doubtful if Turkey will take any English advice on these matters. "If you are for us, say so, and send your army to help us. If you "are neutral, be neutral, and do not plague us with your advice," is, it is conceived, the spirit in which the Turks at present are disposed to accept English assistance. The destruction of the Rustchuk railway, north of Schumla, is most desirable, but Turkey cannot do so if she holds Rustchuk, and she will hold that place and maintain the railway.

If Rustchuk be held, the Turks will not destroy the railway.

The Russians having crossed at, or near Galatz, and having driven back the Turkish force placed near Toultscha, will rapidly advance to occupy the Kustendji line of railway.

The Russian Army will thus be posted as follows :—

1st or right column at Bukarest.
2nd or centre column at Slobodzia.
3rd or left column on the Kustendji railway.

Closing the Dobrudska by admitting water from the Danube into the Czernavoda lakes of little value.

Can the Turks defend the narrow peninsula between Czernavoda and Kustendji?

The Romans formed a powerful line of rampart across the narrow peninsula, not more than 33 miles wide, from the sea to the Danube. One half of the front was covered by the Kara Su or Blackwater Lakes. In those days these lakes were quite impassable. The silt from the Danube has, in the course of years, filled them up. In 1854 the lakes had a depth of 2½ ft. to 3 ft. of water. This position was then surveyed by the present Sir Alexander Gordon, a French officer, and Captain Spratt, R.N. (No. 2428, Admiralty Charts). Since then an embankment has been put across the stream, connecting the lake with the Danube, the waters of the Danube have been shut out, and the lakes partially dried. Cutting the dam would do little good, the difference of level is so slight that the few inches of water that would be spread over the surface would form no real obstacle. Further, no Turkish force could hold this position, its flank and rear threatened from Bukarest and Slobodzia. It may, therefore, be confidently expected that the Russian force will push on to the railway, strike it about Rasgrad, pull up the rails so as to prevent the Turks using it, at the same moment the Russians will appear at Giurgevo, and the second column will probably effect its passage at Turtukai; Rutschuk will fall in a very few days. Meantime the Turks will have come to the conclusion to attack the Russians in force, and will probably leave the protection of their

Turks could not hold the line, while their left and rear was thus threatened

* As an example of how much reliance can be placed on information received in this country, I would observe that, since the above was written, I have been informed that there are at all the places referred to over 60,000 men! Another authority says 40,000 (*vide* page 99).

works at Schumla and come out to fight; commanded as they are, it will be fortunate if they get back without being cut off.

Holding on, however, to these points, the Turks may compel the Russians either to attack the works *en règle* or blockade them; if the former, the Russians will waste much time in getting up siege artillery; if the latter, all the passes eastward of Osman Bazar will be denied to them, and they must leave 80,000 to 100,000 men north of the Balkan to contain the Turkish Army and protect their communications while the remainder may attempt the passage of the Balkan.

The Russian force will be thus distributed :—

Portion of the Russian army having crossed the Balkan.

Roumania, watching Austria and guarding communications	50,000
Bulgaria, watching Schumla and communications	90,000
Hors de Combat	15,000
Leaving available for the passage of the Balkan ..	95,000
Total force that crossed the Pruth ..	250,000

Captain Ardagh detailed for duty with Lord Salisbury.

The importance of Varna and Schumla is so great, that Captain Ardagh, who was under orders to proceed there, and report on these places, when Lord Salisbury asked for the services of an Engineer Officer, and Captain Ardagh has been detached for this duty.

The 95,000 men who attempt the passage of the Balkan will be probably supported by irregular troops, Servians and Bulgarians. They will meet at the other side as they debouch from the passes the Turkish force, said to be 45,000 strong, at Nissa and Sophia.

Probable Russian advance.

The pass that the Russians, under such circumstances, will probably use will be Tirnovo-Kozanlik, or what is known as the Shipka Pass; a portion of the force may also move by Tirnovo, Selimno, and Jamboli.

If the 45,000 Turks south of the Balkan are well handled, they should inflict great injury on the Russian columns attempting to debouch from the mountains, but it is safe to assume that they will not be so handled, and that the Russians will advance to Adrianople, and from Adrianople on Constantinople.

Remarks on Burgas.

It may perhaps be said that the Russians with their force divided, one half north of the Balkan, one half south, and with the Turks at Schumla, Pravadi and Varna, would, if they advanced on Constantinople, be in a very dangerous position. That the Turks having the command of the sea might move their force from Varna to Burgas, land it there and attack the flank and rear of the Russians. This might perhaps be a possible movement for the troops of a European power holding the sea; it is however quite impossible for an army commanded by the present race of Turkish generals.

Further, the Turks, were they to attempt it, would lose Schumla, and gain what? Their army would be landed at Burgas, with the great range of hills stretching from Jamboli right down to Constantinople between them and the Russians. These hills are as great, if not greater, obstacles than the Balkan, rising to 4,000 in height. The writer conceives that such an operation is, for a Turkish army, an impossible one; for a European army a very dangerous one. He is aware that many persons have suggested it, and have based their ideas of the importance of Burgas on a memorandum written by Sir John Burgoyne. Sir John Burgoyne's memorandum was written, however, suggesting Burgas as a place to land an Anglo-French Army; *if* the Danubian fortress had been carried, Schumla and Varna captured or besieged, and the Russians about to debouch from the mountains. The force dealt with was an Anglo-French army, the whole circumstances of the case are different, and the reasons that induced Sir John Burgoyne to attach importance to Burgas, being non-existant, the military importance of the place disappears.

Roads that lead from Adrianople on Constantinople.

There are two roads leading from Adrianople on Constantinople :—

1st. *Via* Kirk Kilisse, Saraj, and Tchataldscha.
2nd. *Via* Lüle-Bergas, Tschorlu, and Silivri.

These roads communicate between Lüle-Bergas, and Kirk Kilisse; between Wisa and Lüle-Bergas; between Saraj and Tschorlu; between Silivri and Tchataldscha.

The Little Balkan, or Strandjá, after it passes Derkos, rises rapidly, the mountains attaining an elevation of 1,500 feet (Kara Tepe), Asaras (3,000 feet). The northern road is separated from the coast road by this ridge, the passes over it are usually 1,000 to 1,100 feet in height. There are but three, one which carries the road from Kirk Kilissi, *viâ* Uskût (980), Samakown (1,080), to the sea at Midia.

One from Wisa to Midia crosses a pass 1,500 feet high, and a third from Saruj, *viâ* Strandja, to Aske.

All these roads are very difficult, and it is submitted that no army would dare to place itself between the sea and a range of hills like the Strandja, especially when the coast road is deep in sand, runs through a very difficult country, and crosses numerous small streams by means of a raft or sheer line bridges.

Thus a Russian force, advancing from Adrianople, and using the northern line, would debouch at Tchataldscha.

Similarly speaking, to the south of the position the Tchataldscha hills sweep round by Tschorlu at the back of Rodosto, and finally joins and forms a portion of the Tekû Dagh range, which divides the waters that flow into the Sea of Marmora from those that flow into the Gulf of Saros. An enemy using the southern road, and arriving near Silivri, would find himself well under the fire of ships, and consequently he would have to fall off to his left and debouch at Tchataldscha also. The two ranges of hills, the Tekû Dagh and the Strandja, forming a sort of funnel, which conducts all troops moving from the west on the centre of the position.

Position of Tchataldscha at the neck of a funnel.

If English Cavalry and Horse Artillery should be landed at Silivri and cover the front of the position, the advance of an army would be slow and cautiously made.

Enemy's reconnaissance of the position.

On arriving at Tchataldscha, the enemy's Staff would see the lines before them, would see the British Cavalry retiring slowly across the Izzedin slopes to the centre, and it would at once become apparent that they were in presence of a strongly entrenched position, and one which it was proposed to hold.

If we now suppose a reconnaissance of the whole front of the position made in force, with all arms, in order to feel it, ascertain its strength, and what guns it mounts, it will give a good idea of the ground occupied by the enemy.

Position of valley, which will conceal the centre portion of the Russian force.

The two main columns of the attacking army moving one by the northern road from Adrianople, the other moving by the southern road, and compelled by the fire of men of war to leave that road, must be supposed to be converging on Tchataldscha. Leaving that place the Staff Officer would find that there is a long, low hill which, stretching from the town, runs south-east. On the northern side of this hill is the branch of the Kara Su which joins the main stream above the railway bridge. On the other side, and between it and the main ridge of hills, is a stream which finds its way into the lake or backwater near the village of Menoukshi, and close under the Plaghani Baghar. Two villages, Iannkeni and Popas Burgas, stand about half-way between Tchataldscha and the lake, the whole length of the valley being about eight miles. At its southern end this valley is about 3,520 yards from the nearest redoubt, No. II.; at its northern end about 5,000 yards from No. V. Redoubt, with a stream running down its centre, gentle sloping banks, and perfectly unseen from the works; this valley offers an admirable camping ground for the column that had been moving by the southern or coast road; into this Koong Déré that column would be at once directed, completely concealed from the hostile position, it would be perfectly safe.

Enemy will use the valley Koong Déré.

The next step the Russian Staff Officer would take would be to seize the hill termed the Plaghani Baghar, entrench it, occupy and entrench the hill marked (120) above the village of Menoukshi, entrench the village of Popas Burgas, and push forward his pickets to the railway close to the Londra Tépé. Having thus secured the right column of his army he would ride along the hills above the village of Plaja, until he came opposite the bridge at Buyuk. On approaching this bridge he would be at once met by a fire of 7-inch guns from a range of about 2,500 to 5,000 yards; the shrapnel from these guns would warn him off and compel him to keep on the reverse slope of the range of hills sweeping round from Baba Burnu, over Plaja to the Plaghani Baghar. Dismounting and advancing more closely, he would gain the shores of the lake and see the three works composing No. I. Redoubt, the obstacles, and the troops in

Fire from the Buyuk redoubt.

shelter-trenches. Opposite the Plaghani Baghar he would see the shelter-trenches and emplacements for field artillery, defending the narrowest part of the lake, here about 1,100 yards wide.

On returning to Menoukshi he would attempt to find out if the marsh were fordable; here he would find the water and mud about three feet deep, and would come under the fire of the 40-pounders at No. II. Redoubt and would see the obstacles at the foot of the redoubt, and might possibly guess, though he should not see, the reserves formed in the fold of the ground near Kara Aghatch. Riding slowly along out of range he could trace the shelter-trenches and emplacements for field artillery to the south of the village of Baghtcaish. Returning to the picket at the Londra Tépé he would see the railway with the viaduct destroyed, and the country, "marked subject to inundation," under water. Sending some men forward he would find that the inundation afforded but a very slight obstacle, but that the men would be at once stopped by the fire from Nos. III. and IV. Redoubts. If he now pushed along the railway he would get under a heavy cross-fire from Nos. II. and III. Redoubts. Examining these works he would see the wire entanglements and stakes in front of them, but he would not see the cuts in the inundation, which would be concealed by the water.

No. II. Redoubt.

Inundation of little value.

Returning to Tchataldscha, he would know that the whole of the southern or right column of the Army was safely encamped—with its right 4,000 yards from the works close to the Lake, that it had excellent camping ground and a good supply of water—and that its pickets, on the extreme right, rested on the sea at Baba Burnu.

Right column of the Russian army can be encamped in an excellent position.

Resuming his examination, he would go from Tchataldscha to the railway station, cross the railway, and proceed by the paved road towards the bridge; on looking to his left-hand north, he would see a succession of valleys all running due north and south, with very gentle slopes to the west and abrupt descents to the eastward—something like this section:—

Encampment of the left column.

Into these valleys, taking care not to approach nearer than 5,000 yards, he would direct the northern column, who could encamp there, the right resting at Tchataldscha, the left stretching to the valley opposite No. IX. Redoubt, at the mouth of which the village of Kastanalik is situated; riding along the paved road to the bridge he would find the bridge destroyed and would be met by a heavy cross-fire from Nos. IV. and V. Redoubts. Dismounting and examining these works, he would see the cuts made in front of them filled with water, the wire entanglements and stakes, and the magnificent slopes in front of No. V. Redoubt—slopes at an angle of 5°, swept throughout the whole extent by musketry and shrapnel. Riding south he would arrive at the crest of the slope in front of No. VII. Redoubt; here at a range of 2,800 yards he might be tempted to bring horse artillery into action to test the nature of the guns mounted in that work; to the fire of his battery would be opposed the 40-pounders in that work, and the grazing fire at 3,000 yards of the 7-in. guns in No. VIII. A fire so tremendous that the horse artillery would, if possible, have to be removed. Examining No. VII. Redoubt, which appeared to offer a vulnerable point, he would find in front of it a formidable abatis, composed of apple, fig, pear, and other fruit trees, the best suited for such an obstacle; in front of these, two lines of wire entanglement, and the intervals staked. He would also see that the work, if captured, would be plunged into at short range from the formidable work, No. VIII. Redoubt. Going a little further north, he would find the parallel valleys suddenly ceasing in a high hill; this he would at once seize and entrench, to cover the left of the northern column now encamped with its right resting on Tchataldscha. Standing on the top of this hill, he would see a steep descent to the Kastanlik valley and a steep precipitous hill on the north; to the eastward he would see No. IX. Redoubt, dominating the whole front, and with the village of Urzunlu at its foot, connected with it by a covered way and surrounded with an abatis, entrenched and supported by two batteries of Field Artillery, while, firing up the valley at his feet, and flanking Urzunlu, would be No. X. Redoubt, with the ground sloping gently to its front, an inundation at its base and surrounded with an abatis.

Nos. IV. and V. Redoubts.

Action of Nos. VII. and VIII. Redoubts.

Urzunlu and No. IX Redoubt

Kastanalik. Ascending the steep rugged hill over Kastanalik, he would occupy it, and entrench it to cover still more the left, but beyond it he would see a series of rugged broken hills covered with scrub, through which he could not make his way, while the front would be swept by the cross-fire of Nos. X. and XI. Redoubts, each protected by abatis and entanglements of wire. Finding his further progress to the north barred, he might descend the hill, leading his horse, for he could not ride down, and move up the bottom of the valley under fire from the works named; here he would see the north-western slopes of the hill on which No. XI. Redoubt stands, clear of scrub. Winding his way under fire, he would gain the col or dividing ridge; here he might pause, and see Lake Derkos to the north, and look down the whole valley of the Kara-Su. Before him would be No. XII. Redoubt, protected like all the rest; behind it emplacements for field artillery, while in rear of the whole, No. XIII. Redoubt would appear commanding the works in front of it, and sweeping with its fire the valleys towards the lake.

Nos. X. and XI. Redoubts.

He would here see that to attempt to move an army by the road he has come, under the fire of the works he has passed, and to thrust that army through the dense scrub between the works and Lake Derkos, would be to expose it to the danger of a flank march, under the fire of powerful artillery in position, through a difficult country, for eight miles, without a road of any kind. Returning to Tchataldscha, he would, at all events, know that his army was safely encamped in a good position, its flanks well supported on excellent ground, with a good supply of water, but he would feel that any attack on the lines short of a regular siege would be hopeless.

R. HOME,
Lieut.-Colonel, R.E.

19th December, 1876.

Inclosure 8 in No. 8.

Memo. of stores to be despatched from England the moment orders are given to begin the works. The following list of stores has been prepared on the understanding that Turkish railway and telegraph material is at the disposal of the British Government, that is to say, that Turkey and England are allies.

Wire, No. 14 B.W.G., annealed, miles	150
„ 12 „ „	150
Pliers, sector cutting, for	180
Tools to employ 100 men on making and maintaining telegraphs, sets	100
Offices, complete, with instruments, watches, and stationary	20
Insulators, Post Office pattern, with shackles, in proportion for miles	100
Shovels, light field pattern, No.	1,500
Axes, pick	1,500
Shovels, Navvies', No.	1,500
Axes, pick, 7 lb., No.	1,500
Cutlasses, Naval, for cutting Underwood, No.	2,000
Bill-hooks, No.	2,000
Axes, American, with curved handles, belved	200
Hatchets, hand, No.	1,000
Stones, grind, large, No.	50
„ field pattern	150
Blocks, 7-in., single	10
„ 8 „	10
„ 9 „	10
„ 12 „	10
„ 7-in., double	10
„ 8 „	10
„ 9 „	10
„ 12 „	10
Cages, wagon	8
Block, snatch, double, 9-in.	5
„ 12-in.	5
Rope, 14-in., coils	4
„ 9 „	10
„ 3 „	5
Felt, roofing, yards	35,000
Huts, store, of corrugated iron, 30 ft. × 16 ft. × 6 ft., with rounded roof, No.	50
Telescopes, similar to those in use with C Troop, R.E., No.	12
Signal shutters, with all apparatus complete, including telescopes for day and night signalling, No.	3
Gunpowder, lbs.	2,000
Fuzes, detonating, No.	500
Primers, mining, No.	500
Bickford's fuze, fathoms	500
Cable for exploding mines, the most recent pattern, yards	5,000
Dynamo-electrical machines, No.	3
Sandbags for loopholes, No.	50,000
Knives, gabion	500
„ draw	30
Mauls, for driving pickets, large size	500
Gloves, hedging, pairs	100
Tanks, galvanized iron, for redoubts, No.	30
Filters, No.	30
Pumps, jack, with suction hose, No.	150
„ 4in. with two barrels, similar to that supplied in 1872 to Blandford, No.	6
Gear, for driving pumps, with hose, No.	6
Saws, cross-cut, with sets (5)	20
„ hand (26-inch) with sets	60
Handy-sile engine for going up in lines of 1 in 10, No.	2
Fascines, hooks	30
Carpenters' tools, sets, complete	10
„ „ „ trench	50
Smiths' tools, sets	6
Spun yarn, cwt.	4
Carts, devil, light, for shifting timber	10
Jacks, rack, 5 tons	20
Cranes, portable, to lift 5 tons, and run on 14 ft. 8½-in. gauge	6
„ with shifting jib, similar to those used in Portland quarries, with guys complete	20
Chisels, brick, 18-in.	24
Bars, crow, 4-ft.	20
„ jumping, 6-ft.	20
Handspikes, common	100
Levels, field service	20
Rods, measuring, 6-ft.	100
„ boning, sets	12
Tapes, measuring, 100-ft.	20
Lines, tracing (tape) 50 yards	100
Hammers, sledge, 7-lb.	50
„ claw, large	50
Stones, whet	5,000
Spikes, 6-in.	5,000
„ 5-in.	5,000
„ 4-in.	30
Ladders, scaling, 6-ft. lengths	100

Memo. of Stores, &c.—*continued.*

The above articles should be despatched from England as soon as possible, and should be in addition to the equipment of the army.

R. HOME,
Lieut.-Colonel, R.E.

1. 12. 76.

MEMORANDUM BY THE INSPECTOR-GENERAL OF FORTIFICATIONS ON Nos. 7 AND 8.

The accompanying reports by Lieut.-Colonel Home are submitted for the consideration of H.R.H. the Field-Marshal Commanding in Chief.

No. 7, dated 19th December 1876, refers to the method of constructing the lines of defence, proposing that they should be executed by contract by Messrs. Hanson & Co. Under present circumstances it is unnecessary to make any observations thereon.

No. 8, dated 22nd December 1876, contains a number of enclosures, completing the report and plans of the position from the Sea of Marmora to the Black Sea.

These reports and plans bear high testimony to the zeal and energy of Lieut.-Colonel Home and all the officers employed under him in their preparation. They evince also a deep sense of responsibility caused by the very great importance of the duties with which they have been entrusted, and, although the works they have designed may never be constructed, the designs and reports in which they are reasoned out and explained will always reflect high credit upon the skill and intelligence of Lieut.-Colonel Home and all the officers under him.

The work has also required much physical endurance, and it is most praiseworthy to all concerned that, notwithstanding the difficulties arising from the extremely bad weather to which they have been exposed, such creditable work should have been produced.

The main feature in the position is the Strandja, or Little Balkan Range, which divides the waters flowing into the Sea of Marmora from those which flow into the Black Sea. The summit of this range, which varies in height up to a maximum of about 3,000 feet, is crossed by the proposed line of defence at a point near No. XII. Redoubt, where it is only 500 feet above the sea, distant about 5,000 yards from Lake Derkos, and 25,000 yards from Buyuk-Tchekmedjeh lake.

In front of this point there is a depression in the ridge, which is only 400 feet above the sea, and from it the waters flow north and south in deep valleys, on the one side into Lake Derkos and thence into the Black Sea, on the other side into the Kara Su and through the Buyuk-Tchekmedjeh lake into the Sea of Marmora.

The main valley of the Kara Su is generally broad and well cultivated, but towards its northern extremity is covered with scrub, which extends over the Strandja Range to Lake Derkos.

The defensive position south of the Strandja is selected so that the enemy must cross this valley in order to approach it, and the works are so arranged upon the points of a series of secondary spurs, lying between deep valleys in which run small tributaries of the Kara Su, as to bring a heavy fire upon an enemy during his advance, while they mutually flank and cover with their fire the ground immediately in front of each other.

The valleys which separate these secondary ridges are generally narrow, with very steep sides, and being in direction perpendicular to the line of works, afford serious obstacles to supports moving from one point to another along the line. To meet this natural defect in the ground, which however is by means bad in other respects for the defence, Lieut.-Colonel Home provides telegraphic communication between all important points, and divides his line into three sections, each of which he proposes to place under a separate command.

	Men.
1. The left section, from the Sea of Marmora along behind the Buyuk-Tcheckmedjeh lake to the railway, to be held by..	15,000
2. The centre section, from the railway northward to Urzanlu, to be held by	20,000
3. The right section, from Urzanlu to Lake Derkos, as also the spit of land between that lake and the Black Sea, by	20,000
	55,000

Lieut.-Colonel Home, in Enclosure E, has entered very fully into a proposed organization for this force, and the additional 15,000 men required for the defence of the Gallipoli Peninsula, making a total of 70,000 men for the two positions.

I do not propose to follow Lieut.-Colonel Home into this proposition, as it does not appear necessary now to consider it; I would merely observe that, looking to the nature of the ground and of the communications, I fully concur with him in the opinion that a force of 55,000 men, supported by the works and their armaments as detailed, is by no means in excess of what is required to hold this position defensively.

The ground north of the main ridge to Lake Derkos is very intricate and to a great extent covered with scrub.

It is difficult from a mere study of the plans to express an opinion on the manner in which it is proposed to occupy it, but, in the first instance, at any rate, it would appear advisable to hold the heights to north of Redoubt No. XII., on the east side of the valley in which is situated Lazari-keui, to which the projected works to the eastward of No. XII. would form a second line.

The defence of this end will be most materially assisted by steam launches armed with boat guns on the lake; the defence of the spit between the lake and the sea would appear to be amply provided for by the measures proposed by Lieutenant-Colonel Home; two or three guns, however, on the point to the south of the lake opposite the floating bridge would afford material assistance in the defence of the spit.

The result of the whole work is highly satisfactory. It shows that so long as the supremacy on the sea is with the defenders, and its flanks, therefore, are secured, as properly assumed in the instructions given to Lieutenant-Colonel Home, this position will afford a very serious obstacle to an enemy advancing upon Constantinople through European Turkey.

There can be no doubt that the defences as now designed would during their occupation be strengthened by adding to the relief of many of the works, by supplementing them with additional works, and in many cases by adding works in second line, so that eventually they might become so strong as only to be capable of being taken by a long and tedious siege. The strength and powers of resistance of these lines would be greatly increased if the force allotted for their defence were sufficient to hold the Kalikratia position, which, being in advance of the Buyuk-Tcheckmedjeh Lake, would require a strong force to contain it, and afford facilities for operations from it on the enemy's flank and rear whilst he was attacking the main position to the northward. In fact, unless this position is held it would apparently become exceedingly difficult to debouch from the lines as designed and to assume the offensive.

Lieutenant-Colonel Home's report, No. 12, deals more particularly with this question.

He has entered very fully and ably into the consideration of the communications, proposing a line of railway branching out of the Adrianople—Constantinople line up to a grand store depôt at Jaserin, with tramways at two points, extending the advantage of communication by rail to important points in the front line near the centre and right with a very complete system of telegraphs for working the lines.

J. L. A. SIMMONS.

15th February 1877.

No. 9.

CONSTANTINOPLE,
22nd December 1876.

Sir,

In many previous reports I have dwelt on the necessity of improving the communications for supply purposes of the position, especially at its northern end. The pencil sketch, attached to Paper A, Report No. 8, shows at a glance the site proposed for the redoubts. It is proposed to connect them with the terminus of the Jaserin Railway, with a tramway to be worked by horses.

A plan and section of this tramway is enclosed. The limiting curve is a radius of 30 metres, the limiting slope one of $\frac{1}{25}$. With this tramway there will be no difficulty in supplying the redoubts at the northern end of the position, in feeding the troops quartered there, and in conveying food to the troops quartered at other places for the defence of other portions of the line.

The plan and section speak for themselves. This tramway cannot be laid until after the railway from Hadem Keui to Jaserin is made, as that railway will bring up the rails and sleepers. The earthworks and road may, however, be constructed simultaneously with the railway.

It is proposed to use the same rails and sleepers as on the railway. The Turkish Government has very large quantities in store, and I have been informed by the Director of the State railway from Scutari to Ismid, that these rails and sleepers could be conveyed from Ismid to Hadem Keui in four days. If it could be done in 10 days it would be sufficient to meet the requirements of the case.

I should hope, if the works are carried out, to have the railway finished in four weeks, the tramway in five weeks, so that it would be available for carrying out material to hut the troops who would arrive at the end of the sixth week.

An estimate is enclosed. By an error the rails have been left out, as they can be supplied by the Turkish Government. They should, however, have been included.

If the rails, sleepers, crossings, and points be left out, their carriage from Ismid is charged to the railway (*vide* Report No. 4), the cost of the tramway would appear to be:—

	Francs.
Earthwork	36,000
Clearing the ground	5,000
Forming the road	1,200
Ballasting..	26,800
Plate laying	17,737
Total	85,827
Add 10 per cent..	8,582
Total cost at an ordinary time	94,409
Add 50 per cent. for extra cost of labour, owing to the way the work is executed	47,204
	141,613

Total actual cost 5,664*l.*, irrespective of material provided by Turkish Government.

I have the honour to be,
Sir,
Your obedient Servant,

R. HOME,
Lieut.-Colonel, R.E.

The Inspector-General of Fortifications.

Note sur le tracé et la construction.

La longueur totale du Tramways est de 6 kilomètres 100 mètres, compris entre la stations de Jasserine jusqu'à Aivatli (emplacement d'un ancien village).

Le tracé à partir du raccordement se développe dans le haut de la vallée de Jasserine, en contournant un ancien réservoir d'eau de la ville de Constantinople, pour traverser le sommet de la montagne et suit demi côte la montagne sur une longueur de trois kilomètres, en suite il suit le sommet de la montagne jusqu'a Aivatli avec des courbes de 25 mètres de rayon au minimum et des rampes et pentes de 0·04 centimètres au maximum.

La ligne sera établie pour une seule voie d'une longueur de 1 mètre 50 c. d'axe en axe, avec des rails de même poids que la ligne projetée de Jaserin (30 kilos. par mètre).

La largeur de la ligne sera de 4 mètres avec des talus de 1 m. 50 c. par mètre pour les remblais et 0·50 centimètres pour les tranchées. La largeur aura 1 mètre 50 c. de plus pour les remblais supérieurs à 0 m. 30 centimètres.

La hauteur du ballast, sera de 0 m. 35 c. d'épaisseur et encaissé dans la terre de manière que le rail soit au niveau des accotements. Pour faciliter la marche des chevaux, la couche supérieure du ballast sera en pierres cassées.

Les traverses auront une longueur de 2 m. 50 c. et seront espacées de 1 m. 20 c. (les rails étant comme ceux de la ligne de Constantinople, et la charge n'étant que de 10 tonnes) c'est à dire 834 traverses par kilomètre.

Il y aura deux voies de garage sur le parcours, une au kil. 3 et l'autre au kil. 5 ; la longueur de ces voies sera de 40 à 50 mètres. Il y aura deux voies à la station de Aivatli d'une longueur de 100 mètres.

Tous les aqueducs seront en poterie.

No. 10.

Constantinople,
25th December 1876.

Sir,

I have the honour to acknowledge the receipt of your letter No. 2, dated Horse Guards, 14th December 1876, covering a printed copy of my letter No. 1 of the 17th November.

With reference to the remarks on my estimate of the strength of the Turkish army, I have the honour to submit extracts from a paper on this subject that I have laid before the Marquis of Salisbury. My figures have been carefully gauged and tested by every means in my power; they have been submitted to Sir Arnold Kemball, K.C.S.I., and I find he concurs in my views, but adds that the power of resistance of the Turks to invasion is greater than that represented by my figures as the effective strength of their army. This I do not contest, but I feel that His Royal Highness must, to a certain extent, depend on the information I submit. This responsibility is a heavy one, and I regret that I am unable to place the army of the Turks at a higher figure than I do. I cannot call local troops, scattered all over the vast territory of the Turkish empire, an army on which reliance can be placed for war. The following remarks will, I feel sure, be borne out by events. I offer them with some confidence, and I beg most respectfully to submit that the Turkish army cannot, for active operations in Europe, be valued at more than 135,000 men, the number given in the Memo. that accompanied my letter of the 15th ultimo. The strength of the Turkish army at the present moment is difficult to arrive at—

1. Because this army, like our own, is composed of a regular force, and a large mass of irregular troops.

2. Because the Turks at this moment seek to exaggerate their forces, for evident reasons.

2 c

Enclosure in No. 9.

DEVIS ET SÉRIE DE PRIX POUR LA CONSTRUCTION D'UN TRAMWAYS D'UNE LONGUEUR DE 6 KILOMÈTRES 100 MÈTRES.

Série de prix pour la Construction.

Indication des Ouvrages.	Quantités.	Prix.	Sommes.	Observations.
		fr. c.	fr. c.	
Déblais et remblais de la plateforme compris les voies de garage	18,000 m.	2 50	45,000 00	Les déblais et remblais seront payés au mètre cube.
Empierrement et fondations d'une partie de la ligne	10,000 m.	11 50	115,000 00	
Pas valeur par mètre courant pour la fourniture à donner à la plateforme pour l'encaissement du ballast.	6,150 m.	11 20	68,880 00	
Ballast par mètre de longueur	6,150 m.	4 00	24,600 00	
Traverses en chêne de 2m. 50—	5089			
*Soit par Kil.	834	7 00	5,838 00	
*Pour les voies de garage	253			
Pose de la voie comprise le transport à l'avancement	6,150 m.	2 75	16,912 50	
*Coins usagés	1,500 k.	0 60	900 00	
*Coins	7	200 00	1,400 00	
*Aiguilles	2	1400 00	2,800 00	
*Pose des croisements et des aiguilles	2	1000 00	2,000 00	
Total			324,330 50	
Imprévue			25,669 50	
Total			350,000 00	
Augmentation de 10 p. pour imprévue			35,000 00	
Total Général			385,000 00	

Prix de revient par Kil. 64,166 66

* These items and the rails can be supplied by the Turkish Government. The cost of carriage and the rails for the tramways—Tr.

3. Because the administration of the Turkish army is essentially bad; the men receive no pay, the officers are 17 months in arrear, and officers of all ranks are paid by extra rations, which the wives of officers of high rank sell to the army contractor for money. There is thus an actual pecuniary advantage in keeping up a large nominal muster-roll with a small effective, which, as the soldier is badly fed, he profits by in a measure, there being more rations to divide. To arrive at the numerical value of the army, it is requisite to examine its organization.

In July 1875 the Turkish army was organized in principle as follows; changes have been made in that organization since, but the changes will be referred to:—

	Men.		Horses.		Guns.	
	Peace.	War.	Peace.	War.	Peace.	War.
Infantry, 168 Battalions ..	75,000	134,200	..	..	..	..
Cavalry, 168 Squadrons ..	14,200	20,540	14,200	20,540	..	..
Artillery, 90 Batteries ..	9,000	15,142	3,900	17,718	540	540
Engineers, 2 Battalions ..	900	1,128	..	..	..	..
Total	99,100	171,010	18,100	38,258	540	540

An army of 171,010 will hardly put in the field 150,000 men; from this force must be deducted troops for service in Bagdad, now threatened by the Persians; troops for Kars and Erzeroum, threatened by Russia and Persia; troops for Crete, &c. 135,000 men, as a field army in European Turkey, is, I submit, a high estimate.

Turkey has, in addition, a large force of irregular troops. Every Turk is more or less a soldier; they are a people encamped in a hostile country, which they have won, and which they hold by the sword. In a certain sense every adult Turk may be counted as a fighting man locally *(pro aris et focis)*, and this is one reason why Turkish sieges are so long and bloody, every man in the place being a local soldier, and fighting to the death. This may be done in a besieged town, but it cannot be done in the field, when, even for a Turkish army, some organization is required, and the *pro aris et focis* is absent.

The following is a statement of the irregular troops; none of them, except the 1st Ban of Redif, has any organization at all:—

Irregular Troops.

1st Class Redifs, 120 Battalions	96,000
2nd „ „	96,000
Levée en masse	250,000
Irregular Cavalry	10,000
Reserve Artillery	2,340
Garrison Artillery	14,280
Zaptieh Police	20,000
Total Irregular Troops	495,620
Total Regular Troops	171,010
Total Turkish Army	666,630

But I need hardly point out to you that on a similar calculation the armed force of the British empire, that is, the Army, is little short of a million; and the figures which may be arrived at by adding the Irish Police, the London

and County Police, the Militia, Indian Army, Home and Colonial Militia, and Volunteers, &c., to the Regular Army are just as reliable.

The 1st Class Redif alone had in 1875 a cadre. This cadre consisted of five individuals for each battalion. When this force was embodied the cadres of the Nizam, or regular army, were weakened by transferring officers and non-commissioned officers to the 1st Class Redif. But, as you are well aware, a Turkish battalion is never reinforced; it simply marches (I have seen many) 650 to 750 strong, and dwindles away, and I submit that the additional battalions of Redif will barely keep the total number of men up to their war footing, although the number of battalions may be largely augmented.

You, sir, are well aware how Turkish troops suffer in the field, from causes quite independent of an enemy.

I again repeat, that taking the 1st Class Redif into account, 150,000 fighting men, or 135,000 for Europe, is the only force which can be counted on as anything but a purely local army. As the only force with a semblance of organization. Behind even the inferior walls of Rustchuk or Silistria, a local army may do good service, but they cannot be moved, and are, I submit, when active military operations are dealt with, of no value.

The Turkish soldier is excellent, perhaps the best in Europe; he is hardy, obedient, and contented; he is very plucky, and full of the fire of his race; at the same time, he accepts wounds, privation, ill-usage, injustice, death, as Kismet. *But the officers are essentially bad.*

Turkey is really the most democratic country in the world. The slave of to-day may be, and often is, the Pasha of to-morrow. Family—family influence (what we term in England *position*) is utterly unknown. To have good officers in such a country they must be highly educated; we know that they are not. The Turkish army has great difficulty in marching and manœuvring, because it is destitute of all administrative departments. During the last few months the valour of the Turkish soldier has won empty victories, because the administrative organization was so bad that the fruits of victory were allowed to escape.

I again repeat, and I do it with a strong sense of responsibility, that to count on more than 150,000 fighting men for military operations, or 135,000 in Europe, would be dangerous. The following facts are curious—

	Men.
Musafir Bey, Aide de Camp to the War Minister, said there were at Pravadi, Varna, and Schumla	150,000
Escoria Bey, a German officer, said, the same day	60,000
Niehand Bey, a Polish officer, said, next day	38,000
Captain James, Scots Greys, counted them	8,000
Sir Arnold Kemball informed me that he was told by Hafiz Pasha that the Turks had sent to Asia	21,000
The British Consul counted them and found	8,200

In the face of these facts, I submit most respectfully that the number of men under arms is only to be ascertained with any truth by an actual examination. If there is value in history, or any light to be obtained from past events, it is this: That irregular troops may fight splendidly behind walls, that they have repeatedly done so, but that in the field they are like chaff before a regularly disciplined army.

I have, &c.

R. HOME, *Lieut.-Colonel.*

MEMORANDUM BY SIR LINTORN SIMMONS ON LIEUT.-COLONEL HOME'S REPORT, No. 10, OF 25TH DECEMBER 1876.

This very interesting and able report refers to the strength of the Turkish Army. Colonel Home maintains that the Turkish Army, for active operations in Europe, cannot be valued at more than 135,000 men, as stated in the Memo. of 6th November, which accompanied his Report No. 1.

This estimate is, I have no doubt, correct, and there is good reason to fear that the waste consequent on the army being on the march and in cantonments throughout the winter has been so great that it will require an immense effort, almost beyond the powers of the Ottoman Government, to maintain an effective force of that strength in the field in Europe, or even to have it ready, should war break out in the spring.

But, according to Colonel Home's showing, there must be a large number of men out of the total of 495,620 whom he describes as irregular troops, who, whether in garrisons or elsewhere, might some of them be available in the event of Great Britain being prepared to take a contingent into pay.

It was to such troops that I referred when suggesting that a British force might be supplemented by a Turkish force, which would be far more economical and more rapidly organized than a force from India, which, moreover, it might be inconvenient to the Indian Government to spare.

Such a contingent was formed under British officers in 1855, and, before its disbandment, became a most valuable adjunct to the British Army. The Turkish soldiers liked their officers, and their treatment was such that the service became popular amongst them, the men and officers (Turks), when disbanded at the end of the war, carrying away with them most pleasing recollections of their association with British officers, and of the just and considerate treatment they had received from the British Government.

It is not at all improbable that the state of the Turkish finances may, in great measure, account for so small a proportion being available out of the total of 666,630, who, according to Lieut.-Colonel Home's Report, are enrolled, and therefore, as stated in my remarks referred to by Lieut.-Colonel Home, a contingent equipped and paid by Great Britain would, while relieving Turkish finance, add to the force available to oppose a common enemy, if such there should be.

Whatever, however, may happen, I think the conclusion I arrived at in my Memo. of 30th October, which accompanied Lieut.-Colonel Home's instructions, is fully borne out by this Report, that a war against Russia, even by England and Turkey combined, with no other Power intervening, would terminate in a blockade of Constantinople, and therefore that the action of England must depend on possible combinations with other Powers.

J. L. A. SIMMONS.

9th January 1876.

No. 12

CONSTANTINOPLE,
12th January 1877.

Sir,

In reply to your letter No. 3, dated 19th December 1876, I have the honour to inform you:—

1. That there are three distinct positions which may be held in advance of Kalikratia to cover the Buyuk Checkmagee Bridge. These positions are marked yellow on the accompanying trace from the lithographed plan. Certain heights which were deficient in the original sketch sent home are added in red, and it is requested that they may be put on the stone at the Intelligence Branch, Quarter-Master-General's Department.

2. In my letter No. 3 proposing to give up this position, I merely contemplated its abandonment as a portion of the *main line of defence*, it being a matter of some importance to determine that line as quickly as possible.

3. Designs for holding all these positions marked in yellow on the trace enclosed are ready, but they are for shelter trenches and emplacements for field artillery, and not for closed works defended by guns of position.

These designs contemplate the occupation of the look-out perch over the village of Kalikratia as a point to cover a retreat across the bridge. But these works are held merely as delaying positions to compel an enemy to develope his force and make a serious attack.

4. It is not conceivable that an enemy, however enterprising, would dare to force the passage of the bridge or water between the harbour and the lake if defended as proposed in my report $\frac{A}{n}$ until at all events the artillery fire of Redoubt I. were subdued, which would require the development of a considerable fire of siege artillery.

5. Viewing the question generally, it is submitted that as much ground to the front should be held as can be held safely. It is for this reason that it has been proposed to land the cavalry and horse artillery at Silivri or Rodosto, and hold the whole country up to Kirk Kilissi, Lüle Burgas, and Wisa, falling back only when compelled to do so.

How far the infantry should be pushed to the front will perhaps resolve itself into a question of transport. But it may be assumed that no point where an enemy may be held in check within striking distance, say half a day's march of the lines, should be abandoned without compelling the enemy to develope his force for an attack.

But it is submitted that officers and men should distinctly understand that such points are held for such a purpose, and not *à outrance*. The importance of the Koug Déré Valley is pointed out in my report $\frac{F}{n}$. But without occupying Tchataldja, which is quite out of the question, I do not see how its possession can be finally denied to the enemy, although he may be delayed in taking possession of it.

6. The railway and tramway surveys have been completed by Mr. Pierchot at a cost of 86*l.* 12*s.*

Mr. Pierchot is what is termed a contractor's engineer. He was employed for some time on the Scutari and Ismidt Lines. He acted more as a foreman of works than as an engineer, as the direction of the line was marked out by myself, and the accuracy of Mr. Pierchot's levels tested at both ends and in the centre by a cross section made independently.

7. In my report $\frac{F}{n}$ a statement of how it is proposed to occupy the various villages is submitted. You will observe that the troops are placed chiefly in front of the lines. The head-quarters of Division and a *garnison de sûreté* only being behind the lines. When the troops are withdrawn behind the lines it will be seen by the report referred to (covered by letter No. 11) that they will be encamped on a wide front; it is proposed to encamp them at

open intervals by Brigades, with a 1,000 yards between the Brigades, thus affording a continual change of ground. These details will be shown on a plan which will be furnished so soon as lithographed copies of the plans sent home on the 21st ult. are received.

8. You will also observe that certain villages are not occupied by troops at all; these have been left out because fever and ague existed there, and because the houses were in some cases bad.

9. I beg of you to assure His Royal Highness that, knowing his views on this subject, I have endeavoured in every way to render the occupation of these villages as healthy and as comfortable as possible, and that should orders be given to prepare them for troops, detailed plans for the purpose, showing the number of men and horses for each house, and what it requires doing to it, where latrines should be made, &c., could be prepared in a very short time, so that each battalion as it arrived might be at once put up.

I have the honour to be
Sir,
Your most obedient servant,
R. HOME,
Lieut.-Colonel, R.E.

The Inspector-General of Fortifications.

No. 15.

CONSTANTINOPLE,
12th January, 1877.

Sir,

I HAVE the honour to acknowledge the receipt of your letter (No. 4), dated Horse Guards, Whitehall, 21st December, 1876, and have to inform you that the officers named in the margin* disembarked here for duty on the 6th January.

I have the honour to be, Sir,
Your most obedient servant,
R. HOME,
Lieut.-Colonel, R.E.

The Inspector-General of Fortifications, War Office.

No. 16.

CONSTANTINOPLE,
14th January, 1877

Sir,

I HAVE the honor to enclose the following Reports:—

Defences of Gallipoli (Bulair Lines).

1. Survey of the ground on a scale of 4 in. to the mile. Sketched by Lieutenant Cockburn and Lieutenant Chermside.
2. Plans and sections of the existing lines, showing proposed modifications.
3. (A). Report on the general position.
   (B). Communications.
   (C). Store Depôt and Landing Places.

* Captain G. E. Grover, R.E.; Captain T. H. Anstey, R.E.

(D). Telegraph and Signal Stations.
(E). Quartering the Troops.
(F). The enemy's position.
(G). A Memorandum of Stores required from England.

I have the honor to be,
Sir,
Your obedient Servant,
R. HOME,
Lieut.-Colonel, R.E.

The Inspector-General of Fortifications.

Inclosure in No. 16.

REPORT ON THE DEFENCES OF THE GALLIPOLI PENINSULA AT BULAIR.

Owing to the narrowness of the passage between the continents at more than one point on the Hellespont, and notably at Kilid Bahr, where the width is barely 1,400 yards, the Peninsula of Gallipoli has been from the earliest times the high road to Europe; by it Xerxes invaded Greece, and here the Turks from Broussa laid the foundation of their European Empire.

Nature of the country.

The surface of the country consists generally of high ground along the axis of the Peninsula, the flanks being deeply furrowed by ravines and watercourses running in general at right angles to the central ridge. The greater part is tilled for corn, but at the time of the late American war the Peninsula produced 2,800,000 lbs. of good cotton, and now grows annually about half that amount. Timber is, in general, scarce; but about 12 miles below Gallipoli at Unguarderé and Yulova (French Staff map) there are extensive fir woods, the trees being as much as 15 feet high, and 13 in. or 14 in. in diameter. These woods lie about an hour from the Hellespont, and the timber in them can be hauled down by oxen, and rafted to the beach below the right of the Bulair lines, or to Gallipoli, for making landing-places. Fir of a larger size can likewise be obtained from the hills above the west shores of the Gulf of Saros; whence also the Peninsula draws its supplies of charcoal. Firewood (poplar and oak) is chiefly got from the Asiatic shores of the Hellespont, but a good-looking lignite crops out at Koumkeui, and also near Chaitankeui, which, it is believed, could be used to work steam machinery.

Between Kourme Tchiftlik and the north-east of Bulair there is an oak wood of 600 to 700 acres, thinly covered with scrub, fit for fascines and hurdle pickets, and with stunted oaks at from 10 to 50 yards apart, having trunks 6 feet or 7 feet high, and as much as 13 ins. or 14 ins. in diameter.

At the north extremity of the Gulf of Saros the Peninsula is about 10 miles wide, but in front of the village of Bulair it narrows to a width of about 7,500 yards, and at 1¼ miles further west, the narrowest portion is reached, where the width is less than 6,000 yards.

The first position for the defence of the Peninsula is a little north of Jenikeui, where the main ridge from Bulair to the north-west ends in a steep commanding height. At this point, however, the width to be defended between the Sea of Marmora and the Kawak river is too great to be permanently held by a small force.

The Kawak position.

In front of Bulair there is a position which, roughly speaking, lies along the line of the Soniore stream (a watercourse almost dry in summer). Where traced the prolongation of this stream would reach the Gulf of Saros, the shores of the

Bulair position

latter are bounded by a range of low hills, at most 220 feet high, which fall rapidly to the sea, and terminate in low, almost unbroken cliffs. Inland these hills gradually fall into a broad flat valley, about 100 feet above the sea, whence the ground again rises to the main ridge, the height of which, at half a mile east of the Soniene stream is about 360 feet; from this ridge the ground falls to the stream in a slope facing the heights before Boulair. The left, or south-east flank of the main ridge falls like the right into a valley about 90 feet above the sea, separating the main ridge from another nearly parallel to the shore of the Sea of Marmora, and about 200 feet high at its crest, which falls to the sea level at the mouth of the Soniene stream where the ground is flat and marshy. The valley formed by this stream lies so low, that ships off its mouth can see up it for at least two-thirds of the total width of the Peninsula. The valley beyond this is concealed from the Gulf of Saros by the heights along its shore, and is only exposed to shipping firing eastward across the northern extremity of Ozoun-Tepé. The Boulair heights end so steeply at the boundary valley that works on the higher ground cannot defend the toes of the slopes, but their exposure to the sea in part remedies this; otherwise the commanding nature of the heights, and the bareness and extent of the foreground exposed to fire make the position a suitable one for permanent works of defence; one, at least, of these should be placed on the south-western extremity of the low heights along the Gulf of Saros.

The Boulair Lines of 1854-5.

At the time of the Crimean war, the extent of ground it was desirable should be exposed to fire before a position was very much more limited than at present, especially as regards artillery fire, and the relative importance of material obstacles in the way of an assailant's advance (difficult ground for instance) was greater than now; this, coupled with the fact that the position in rear of Boulair is the shortest available, made it in every way the best. About 2,500 yards south west of Boulair cemetery, the saddleback which extends therefrom rises to a height of more than 500 feet, and from this point a ridge at right angles to the saddleback descends to each sea. The crests of these ridges form in general the lines of defence; that on the left, roughly 3,600 yards long, has a valley extending along its front, while the valleys in rear of it approach it at right angles. These, while offering favourable places for the concealment of supports and reserves, from their direction impede lateral movements, which have in consequence to be made along the ridge itself, and would therefore be exposed.

The ridge on the right, which is about 2,400 yards long, has a main valley in front; this, from its direction, is not so well swept by fire as that before the left section; but, on the other hand, there is a valley in its rear and parallel to its length which, at the same time provides cover for, and conceals the lateral movements of the supports for this section. The culminating point is occupied by Fort Sultan, a hexagonal bastioned earthwork (Pl. IX.); half-way between this and the Boulair cemetery the saddleback throws out a spur to the north-west, which faces, and in a manner commands, the left section of the lines. The valley between is swept by the fire of the north-west face of Fort Sultan, the front of which commands the saddleback and ridge, while its east face shoots across the ground before the right front of the position, and its south-west face down the valley in rear of the right.

In addition to Fort Sultan the defences consist of a closed bastioned redoubt (Fort Napoleon) on the left and of an open work (Fort Victoria) on a height on the right. The intervals are closed by a parapet, either of a bastioned or indented trace, and with small gaps for sorties. The trace throughout bears the marks of a period when the great power of direct infantry fire had not been realized, when the greatest importance was attached to the defence by flank fire of the immediate foreground, and when, too, works were not exposed to so searching a cross-fire from the more distant artillery positions of the assailant. Accordingly, the lines do not appear to have been provided with traverses. The length of these intermediate lines is, on the left of Fort Sultan, 1,100 yards, and on the right 2,700 yards, making a total of about 7,000 yards of parapet.

The flanks rest on the seas, that on the right making a return along a ridge, with a slope of 35°; between the foot of this and the sea is a narrow strip of ground at the sea level.

Naval Co-operation.

The possession of the water on both sides of the peninsula, which gives

the power of striking at any moment the flanks and communications of the assailant, adds immensely to the offensive power of the defence, while the presence of ships of war off the flanks of the lines of defence will, as long as they can act, greatly narrow the front available for the assailants' development.

The limits of action of ships' guns, in support of the advanced defences before Bulair, have already been referred to.

For the defence of the lines themselves the extreme left flank, to begin with, is exposed to ships on the Gulf of Saros,* but the ridge extending from the left to the north extremity of the Ozoun Tepé, conceals the Valley of the Dourous water channel from the sea to the west of it. Ships, however, can enfilade this valley by firing due south, between the north end of Ozoun Tepé and Baclabrono promontory, or south-west between the latter and the old tile factory, west of which the ground rises. As long, therefore, as ships' fire is available across this area, an assailant cannot venture to seize Ozoun Tepé, and this ridge might be held as an advanced position by infantry and field guns pushed out from the left flank of the lines along the sea beach, under cover of the cliffs, up which there are available ramps for guns to reach the crest. A force in this position would oblige the attack to come forward with its right front much reduced, while, if the ridge be not held and flanked by shipping, an enterprising assailant would doubtless get a footing on its north extremity and secure an artillery position on its crest, which would, in a measure, envelope the left of the lines.

From the Sea of Marmora ships can act more favourably, as there is nothing on this side corresponding to the low features beside the Gulf of Saros. The long valley running up to Bulair from before the right flank can be enfiladed from the sea, and the heights facing the right and centre of the position, in other respects favourable for the artillery attack, can in many places be rendered untenable by the fire of shipping.

At the same time it is to be remembered that the action of shipping can hardly be counted on at all to resist advances made during the night, or under cover of fog, mist, or rain, and for this reason it is proposed so to dispose the available artillery, as in some cases, to do the work which might at other times be entrusted to the fleet.

Present condition of the lines.

As far as the parapets are concerned, the lines appear to have been completed throughout. On the right, where the soil is of a somewhat sandy nature and self drained, the ditches are nearly as sharp as when first dug out, and the parapets are less degraded than on the left (Plates. VI. to IX.), where the ditches have partly fallen in, and the parapets are in many places ploughed over.

On the whole, however, the mass of work still standing is so great that even were a better position available, we could not for temporary defence afford to give up the present one; in spite of the disadvantage, a very serious one, that as accounts of these lines have been published, any probable assailant will have a knowledge of them, such as is seldom to be got for the attack of field works. At the present moment, however, as the Turkish conscription has so drained the peninsula of labour, it is fortunate so much has already been done. One point in favour of the works as they stand is that they are now so toned down by a covering of grass, &c., to the general colour of the surface, that they can with difficulty be distinguished at a distance. This, it is considered, should be borne in mind in remodelling them, particularly in the portions intended for infantry defence, where, in many cases, concealment would be more valuable than an increased section.

The work of remodelling the lines will be treated of under three heads, the available armament being, it is presumed, 26 heavy guns and 4 field batteries.

1st. The preparation of the intermediate lines.
2nd. The changes wanted in the three redoubts.
3rd. The formation of additional works.

But before considering these details, it is worthy of remark that half of the eight miles of track between Gallipoli and the lines is (see Road Report) the unprepared surface of the ground, and is quite unfit for long continued or heavy traffic, supposing Gallipoli to be the base of supplies. It is true that a good

* "Xeros" on the Naval charts.

deal of material might at many times be landed by means of lighters of small draught from ships lying off the north-east end of the lines, where the sandy beach is not unfavourable, and whence a good road runs up to Bulair, and also by similar means some stores might be landed in the small protected harbour north-west of Bulair; in spite of this, however, a large proportion of the supplies must, in any case, be brought out from Gallipoli, and it would be desirable, if not necessary, to lay, at all events, a horse tramway between that town and the rear of Fort Sultan.

The line that would furnish the easiest gradients is shown in blue on the French map.

From the termination of the tramway rough roads should be formed in rear of the line. Some stone for this purpose is, it is believed, procurable just in front of the sites of advanced works Nos. I. and II., and on the spur in rear of Fort Victoria. There is, too, an abundance of stone suitable for the purpose in the cliffs between the north end of Ozoun Tepé and the left of the lines, whence it could be carted up.

The preparation of the intermediate lines will consist of the formation of good interior revetments, with banquettes, and the provision of traverses and splinter proofs for the infantry defenders.

The placing of obstacles before the works.

The formation of traversed gun portions for the heavy guns, with expense magazines for every two or three guns, and of numerous emplacements for the field guns, into which they may be run as circumstances may require.

The drainage of the works.

The provision of a supply of water.

Trap. I. The parapets in general are still 5 ft. 6 in. to 5 ft. high, and of a rounded form. The interior slope should (Fig. 4, Pl. III.) be notched out of this and revetted, the surplus earth being thrown right and left to form traverses at central intervals of about 40 feet; in addition, to complete the traverses and to increase the cover behind the parapets, trenches should be dug in rear of the banquettes, the earth from which goes to the traverses. It is to be understood that at those portions (for instance between 27 and 26, Pl. II.) where the parapet is degraded, it must be made up to a height of about 4 ft. 6 in., and will be traversed like the rest.

As the brushwood at hand is only fit for fascines, large numbers of which will be required for steps or for revetting traverses, it will, it is thought, be best to send out galvanized wire netting which, with stout pickets, forms an excellent revetment; a face of puddled clay being smeared on, if the soil be very sandy.

This material is by far the lightest that can be used, and is more durable than any of wood or of sand bags, it can also be very quickly put up.

For the steps of the banquettes, &c., it may be assumed that enough fascines can be got before the position.

Sandbag Loopholes. In addition to the revetment of the interior slopes, a liberal use should be made of sand bags to form loopholes on the parapets.

Field Traverses. In those portions of the lines which are liable to be enfiladed in one direction only, some of the traverses should be made hollow (Fig. 2, Pl. V.) The remainder of the overhead cover may be somewhat of the form shown in Fig. 3, Pl. V., in some cases detached from the parapets, for convenience of drainage, but with numerous wide exits to prevent the defenders from being checked in coming out. Without entering into the details of these arrangements, it may be assumed that at least 50 yards of hollow traverse and 50 yards of field casemate should be provided for each 1,000 yards run of parapet, or 350 yards run of each for the 7,000 yards.

Disposition of the Artillery. Commencing on the right of the lines (Pl. II.) the portions 79-75 face S.E., but at the salient 78 there is room for a field gun to shoot N.E. along the coast road from Ganos, which bears about 70° (m).

For a similar purpose two field gun emplacements are formed at 76, two in 74-73 and one in 69; making in all, six to sweep the low ground between the opposite hills and the sea. While the ships are in action these emplacements will not be in use.

About 120 yards in rear of 68-67 and on the high ground (Pl. III.) six field gun emplacements are formed on the crest of the ridge, behind which the guns can wait, to come into action there, or in the six emplacements on the right.

Leaving the redoubts to be described further on, the remaining field gun emplacements in this section are three at the points 52, 51 and 50, which, with three emplacements in advanced Redoubt No. 1, will be 18 emplacements for probably two batteries.

Commencing again on the left front, the parapets 40-32 run below the crest of the ridge and about 400 yards in rear of the salient 47 there is a hill top, marked 460 ft. on the survey, on which a position battery for three heavy guns is to be formed, to command the assailant's position on the opposite ridge. About 50 yards S.W. of 40-41 six field gun emplacements are to be formed near the top of the valley, but still so as to be defiladed by the ground on their right. Similarly six emplacements are to be formed about 80 yards in rear of and above 35-36, so that a battery can occupy either group alternately, or detail a half battery to each.

Two heavy gun portions should be formed to fire over the convreface at 29, which makes a fair screen against the opposite heights.

Beyond this three field gun emplacements are provided on the high ground in rear of 27-26, three are formed in 11-12, and three on the top of the conical hill just behind 4-5; these, with three emplacements in advanced Redoubt No. 2, will be 24 field gun emplacements for probably two batteries along this section, in addition to the two field gun emplacements in Fort Napoleon.

Field-gun Paths and Emplacements. Each field gun emplacement will be provided with a rough platform of three stout planks, and with a trail plank which can be shifted. In addition, a barrel or box to hold cartridges will be let into the most suitable parapet or traverse, and a plank on which to stand shells will be provided. The heavy gun portions are to be securely traversed on each flank if necessary, and portions of the traverses are to be made "hollow" to give the detachments cover.

Platforms. The platforms will be formed of two crossed-layers of 3 in. or 4 in. plank spiked together; pits for the gunners being made in the terreplein at the inner corners of the platform. For the B.L.R. guns of position the platform should be level and wooden wedges used to check recoil; those for heavy M.L.R. guns may be laid with a slope of 1 in 24, provision being made for anchoring a pivot in case naval slides are used. The level of the platforms should be 5 ft. below the crest of the parapet, over which the guns are to fire, a wide scoop of about 15 in. deep being made to shoot through. Additional cover is also provided for each emplacement in the shape of sand bag bonnettes, two sand bags thick, to stop shrapnel and splinters, which can be shifted to suit the direction of fire.

Magazines. Ordinary rectangular magazines, with space for 200 cartridges per gun, will be formed for each heavy gun, or group of 2 or 3 in the most convenient spots. In addition, a bombproof magazine for reserve gun and small-arm ammunition will be made in rear of each flank, and defiladed from fire.

Obstacles. As regards obstacles, the nature of the position is such that the natural lines of advance to the assault are up the ravines and watercourses which approach the defences; both because they are more broken, and therefore give more cover, and also because most of the ridges are more or less exposed to a cross fire. It is proposed, therefore, that broad belts of wire entanglements be placed across these ravines, and well under the musketry fire of the defending parapets. To the right front of Fort Victoria, there is a hill on which there are perhaps 100 large trees suitable for abatis, and these might be used to form a barrier across the low ground at the extreme right. A few of them should also be brought up to close the gaps left for sorties in the lines; in case iron *chevaux de frise* be not available.

In addition to wire entanglements in the ravines, a liberal use of them should be made in front of the more exposed portions of the ditches themselves, and when provision has been made for palisading the ditches of the closed works, all available material of the kind should be used similarly in the more exposed ditches of the lines.

Drainage. In general, the fall of the ground from centre to flanks makes drainage easy. In some cases the water in running off has cut through the parapets, and

here and elsewhere when water shows signs of collecting in rear of the parapets, use should be made of large wooden troughs run out under the parapets, and laid *straight* so as to keep clear.

Water Supply. In the valleys in front of the lines are several fountains, whence water can be collected while the work is in progress, but in order to ensure a supply the sources in the valleys immediately in rear (*see* Plan) should be opened up and the water stored in iron tanks; some of which should also be placed in the field casemates behind the works and in the redoubts.

Modifications of existing Forts.

Fort Victoria. Commencing on the right, Fort Victoria occupies a commanding position, seen even from the high ground in advance of the Bulair heights. The work is, at present, open (Pl. II.), and is in consequence liable to be taken in reverse; in case, by a successful night attack, or other contingency, the intermediate lines were carried.

It is therefore proposed to close it by a breastwork running just below the crest of the spur to the south of the existing portion, and to carry this portion round to A. The portion U V is only just below the ridge of the spur, so as to be taken in reverse in its turn if necessary by the fire of Fort Sultan.

U V and $x\,a$ are traversed with numerous small traverses, and have the section shown in Fig. 2. That of $a\,\beta$ is given in Fig. 5, and a A being exposed to a reverse fire, has the section Fig. 3, and requires to be carefully drained as the ground A a is wet.

It is proposed to place 6 heavy guns in Fort Victoria at S, P, R, K, J, and E; and to form a casemate with ramped ends for exit (Fig. 1) in a portion of the ditch of the curtain G H, the parapet being thrown forward to form a low roof over which Fort Sultan can fire into the ravelin, the ends of which will be joined by parapets with F and M. The parapets of the ravelin will be thickened, and a traverse added between K and J; while the ditches from A to U will be palisaded if possible.

Fort Sultan. The chief difficulty in rendering Fort Sultan (Pl. XI.) defensible, is its great depth (over 650 yards), and comparatively small frontage: in consequence of the former, most of the interior space is exposed to the curved fire of modern artillery.

Of the 20 heavy guns for the position, it is proposed to place 12 in Fort Sultan; but, to provide emplacements for 19 or 20, so as to shift the guns as may be required.

In general, the curtains, as well as those portions of the faces and flanks not required for guns should be revetted for infantry, and the curtains of bastions A, B and C, D will, in addition, require three traverses each, and the curtain E D, 4; under cover of these, two field-gun emplacements should be made in each curtain. In the bastion F it is proposed to form a circular emplacement for a heavy gun to shoot "overbank" through about 200°, under cover of a high parados. This gun is intended to flank the left section of the lines and to take the right section in reverse.

The right face of bastion A will require two traverses, each partly hollow, and three heavy gun emplacements to command the great valley before the left section. Bastion B will be furnished with three traverses and four heavy gun portions; curtain B C, with five traverses and three heavy gun portions; bastion D, with two traverses and three heavy gun portions; bastion E, with one traverse and one heavy gun portion.

In addition to the preparation of the parapets, which will be made up, if necessary, by partly digging out the ditches and by excavating trenches in rear, it is proposed to retrench the fort by a shallow work in advance, and also by a straight parapet, but as this parapet is exposed to reverse fire, its defenders must be sheltered in the rear ditch of the front retrenchment, whence they will be advanced in case the rear of the fort is carried.

The front parapet of the retrenchment should be prepared with emplacements for indirect fire, to receive three guns from the front in case these are worsted; and each flank of the retrenchment has a direct fire emplacement for a heavy gun to flank the front of the lines. It will be noticed that the front ditch of the retrenchment is in part ramped to the front, so that the ditch may be used as cover for the defenders of the curtain of B C.

Obstacles. Fort Sultan being the decisive point in the lines great pains should be

taken to palisade or otherwise secure the ditches from being "rushed," which would be easy in their present condition. In addition, wire entanglements should be used.

Fort Napoleon. This work (Pl. X.) is much degraded and wants much repair. A traversed gun emplacement will be formed in the curtain A B, and one in each of the bastions, B and C (all three for heavy guns), and two for field-guns in the right face of bastion E. A common traverse will be formed in the curtain D C, and a hollow one (section Fig. 2, Pl. V.) across the interior of the work, so as to protect the parapets of the fronts D E and E A, and to cover a portion of the garrison. The rest of the parapets will be prepared for musketry defence.

The ditches being in themselves but very slight obstacles, it is desirable, as in the case of the other works that they should have palisades or fraises, and that the space between 21 and 19 be closed almost entirely by entanglements of wire.

Advanced Work No. 1. In addition to the existing works two more appear desirable.

The site for No. 1 is completely seen either by Sultan or Victoria.

The parapet A B sees up the valley between it and Bulair cemetery, portions of which are otherwise unseen; B C sweeps the spur to its front and the opposite hill; and C D and D E search the low ground in front of Fort Victoria and the right of the lines.

The parapets at A should be 7 feet high, falling gradually to 4 ft. 6 ins. at B, whence B, C, D, E will be 4 ft. 6 ins. high, so as to avoid having to make barbettes for the three field-guns, which will be worked on the surface of the ground, and fire through scoops in the parapets.

Except at the gun portions, these parapets will have trenches as well as ditches the better to cover the defenders, and portions of the trenches will be roofed as in Fig. 3, Pl. IV.

The remaining parapets are low shelter trenches, too low to impede the reverse fire from the main works. A broad belt of wire entanglement is to be formed round the front and flanks of the work.

The hollows in rear gives fair cover for supports.

Advanced Work No. II. This is an open work fired into directly by the parapets 12—19.

The parapets from A to G are 5 feet high, B G being an emplacement for two field-guns concealed in a fold of the ground. From G to C the parapet rises to a height of 7 feet and continues that height to E. At D, a barbette platform is made for a third field-gun. The traverses in C D are made in part hollow on their north sides (Fig. 2), and a portion of the trench of D E is blinded, as in Fig. 3. From E the parapet falls from 7 feet to 5 feet at F.

The salient position of this work gives it a considerable power of flanking the front of the left of the lines.

From the above sketch of what it appears desirable to do in putting these lines into a state of defence, it will be seen that the mass of the work is of a technical nature, and not such as can be done easily by the ordinary labour in the country.

Attached is an approximate estimate of materials which it might, under certain circumstances, be necessary to import hastily for the work of preparation. As far, however, as timber is concerned, it is believed that the resources of the Peninsula will suffice.

T. FRASER,
Captain R.E.

Lieut.-Colonel Home, C.B., R.E.

List of Certain Stores required for Remodelling the Bulair Lines.

Wire netting, 16 B.W.G., 1-in. hexagonal mesh, width 2 ft. 3 in. (about)	12,600 yards run.
" iron, 14 B.W.G., for fascines	6 miles.
" " 12 B.W.G., for entanglements and anchors	20 miles.
Iron, bar, $\frac{5}{8}$-in. round for dogs	5 tons.
" spikes, 5 in. and 6 in., for platforms and splinter proofs ..	10,000.
Sills, 4 in., light for troughs	5,000.
Chevaux-de-frise, iron (6-ft. lengths)	100.
Tanks, iron, galvanized, water, 300-gallon	30.

Sandbags	25,000.
Plank for trough drains	12,000 ft. run × 9 in. × 2 in.
Timber for 630 yards of hollow traverse	2,520 pieces of 8 ft. × 9 in., round or square. 630 „ 6 ft. × 7 in., „ 1,260 „ 6 ft. × 9 in., „ 2,520 „ 9 ft. × 9 in. × 3 in. planks.
Timber for 560 of field casemates ..	2,000 pieces of 12 ft. × 4 in., round or square. 1,500 „ 6 ft. × 7 in., „
Timber for 40 heavy gun platforms ..	960 planks of 15 ft. × 9 in. × 3 in. or 4 in. 800 „ 18 ft. × 9 in. × 3 in. or 4 in.
Timber for 48 field guns platforms ..	240 planks, 13 ft. × 11 in. × 3 in.
Timber for 15 magazines for 2 guns each	525 of 10 ft. × 7 in., round or square. 175 of 10 ft. × 5 in., „ 490 of 10 ft. × 9 in. × 2 in. planks.
Pickets for wire entanglements* ..	10,000 of 3 ft. × 2 in., round or square.
Pickets for wire netting*	9,000 of 5 ft. 6 in. × 2 in. or 1½ in., round or square.

T. F.

Inclosure A in No. 16.

GENERAL REPORT ON THE BULAIR LINES, FOR THE PROTECTION OF THE GALLIPOLI PENINSULA.

Memorandum.

Not advisable to alter the main lines as taken up in 1854.

Having carefully examined the country in rear and advance of the lines constructed by the Anglo-French Army in 1854, I am not prepared to recommend any alteration in the general line, although I submit certain modifications and changes, which it appears to me desirable should be made. (*Vide* Plate I.)

Reasons.

I base my opinion that the same general line as that taken up in 1854 should be maintained, on the following reasons:—

1. It is the shortest line that can be taken up, being across the narrowest portion of the Peninsula.

2. The lines are in a very good state, as will be seen from the sections. I could not have believed that, after the lapse of 22 years, earthworks constructed in this country would have stood so well and needed so few repairs.

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* If the oak trees in the wood before Bulair were cut down and cleft they would furnish all the pickets required.

Plate II.

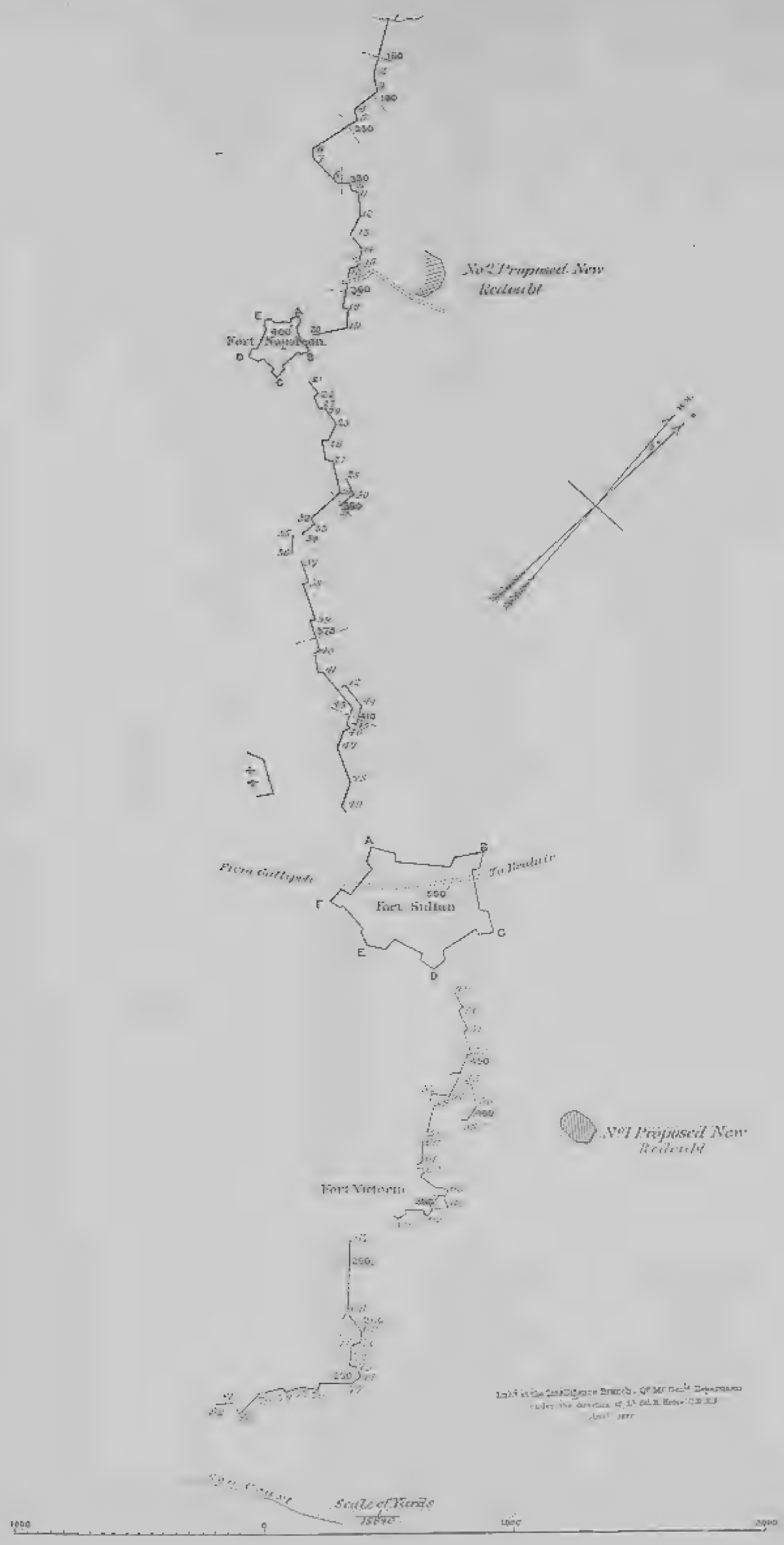

No 2 Proposed New Redoubt
Fort Napoleon
Fort Sultan
To Bouhir
Fort Victoria
No 1 Proposed New Redoubt
Scale of Yards
1000
0
1000
2000

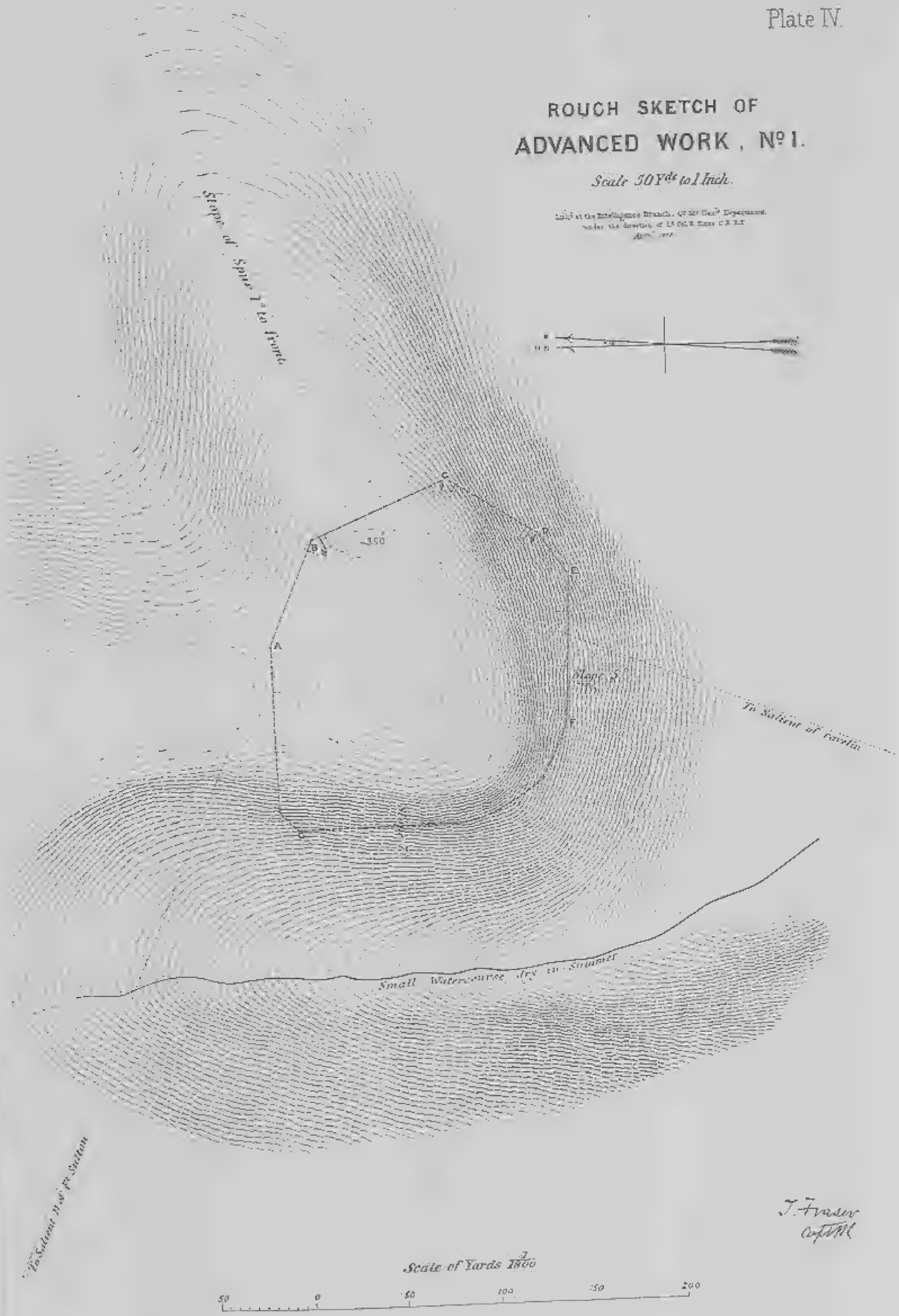
Plate III

ROUGH SKETCH OF SITE OF
FORT VICTORIA.

Plate IV.

ROUGH SKETCH OF
ADVANCED WORK, Nº 1.

Scale 30 Yds to 1 Inch.



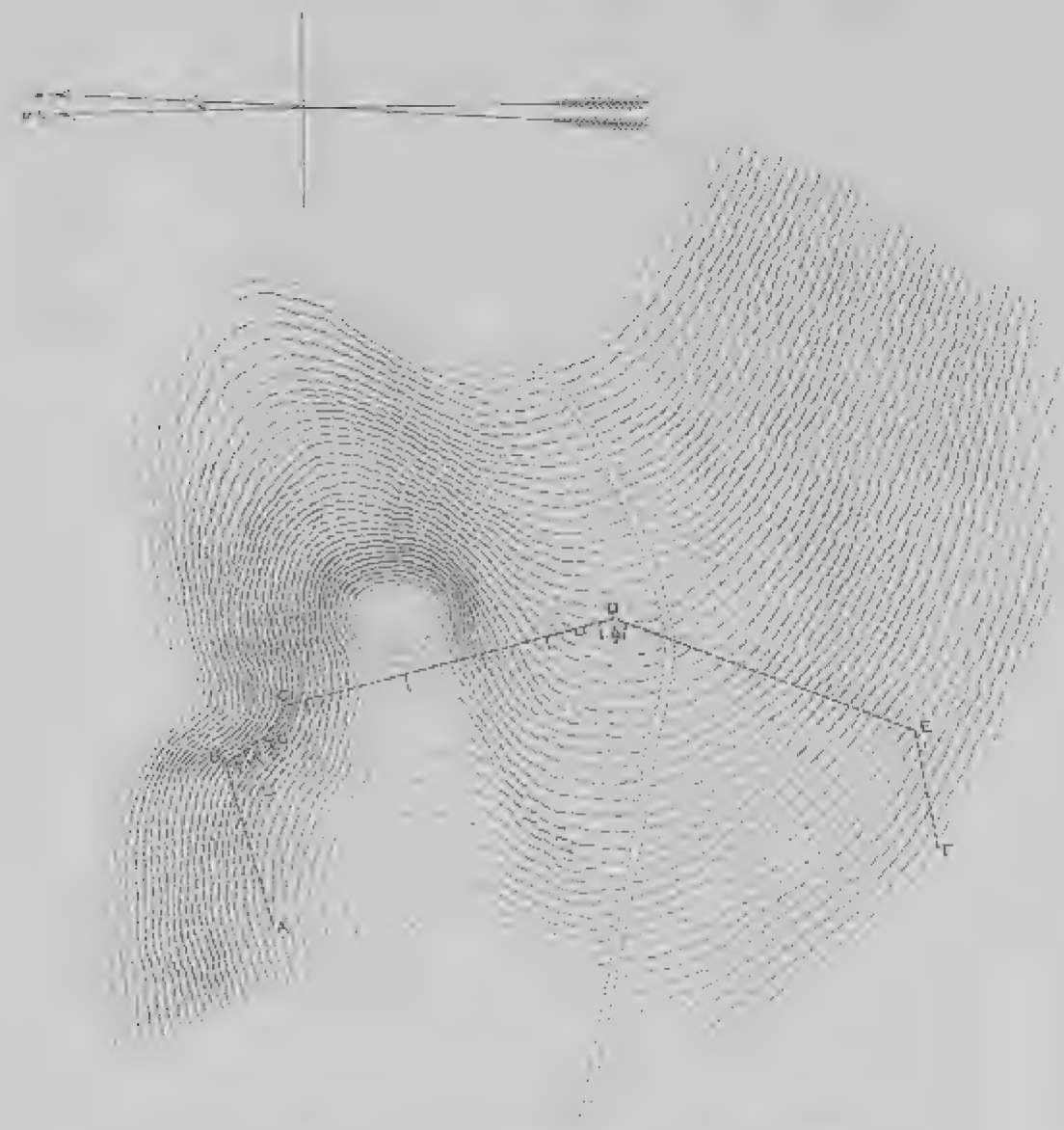
J. Fraser
Captn RE

Scale of Yards 1/600

50 0 50 100 150 200

Plate V.

ROUGH SKETCH OF ADVANCED REDOUBT No. 11.



The Salient D is 320 yards in front of the Lines at 15.

Fig 1.

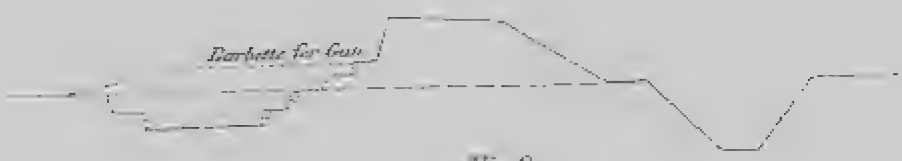
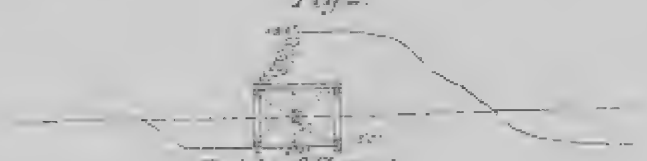
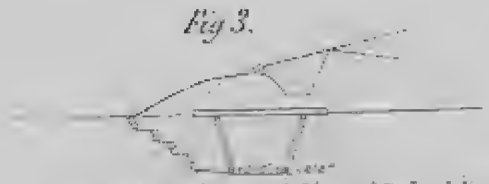


Fig 2.



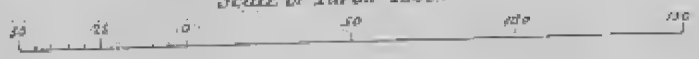
Uprights 6 Ft apart

Fig 3.



Alternate widths of 8' provided with steps.

Scale of Yards $\frac{1}{1800}$.



Lith^d at the Intelligence Branch, Qr Mr Genl's Department
under the Direction of Lt Col. H. Hope C.B. R.E.
April 1855.

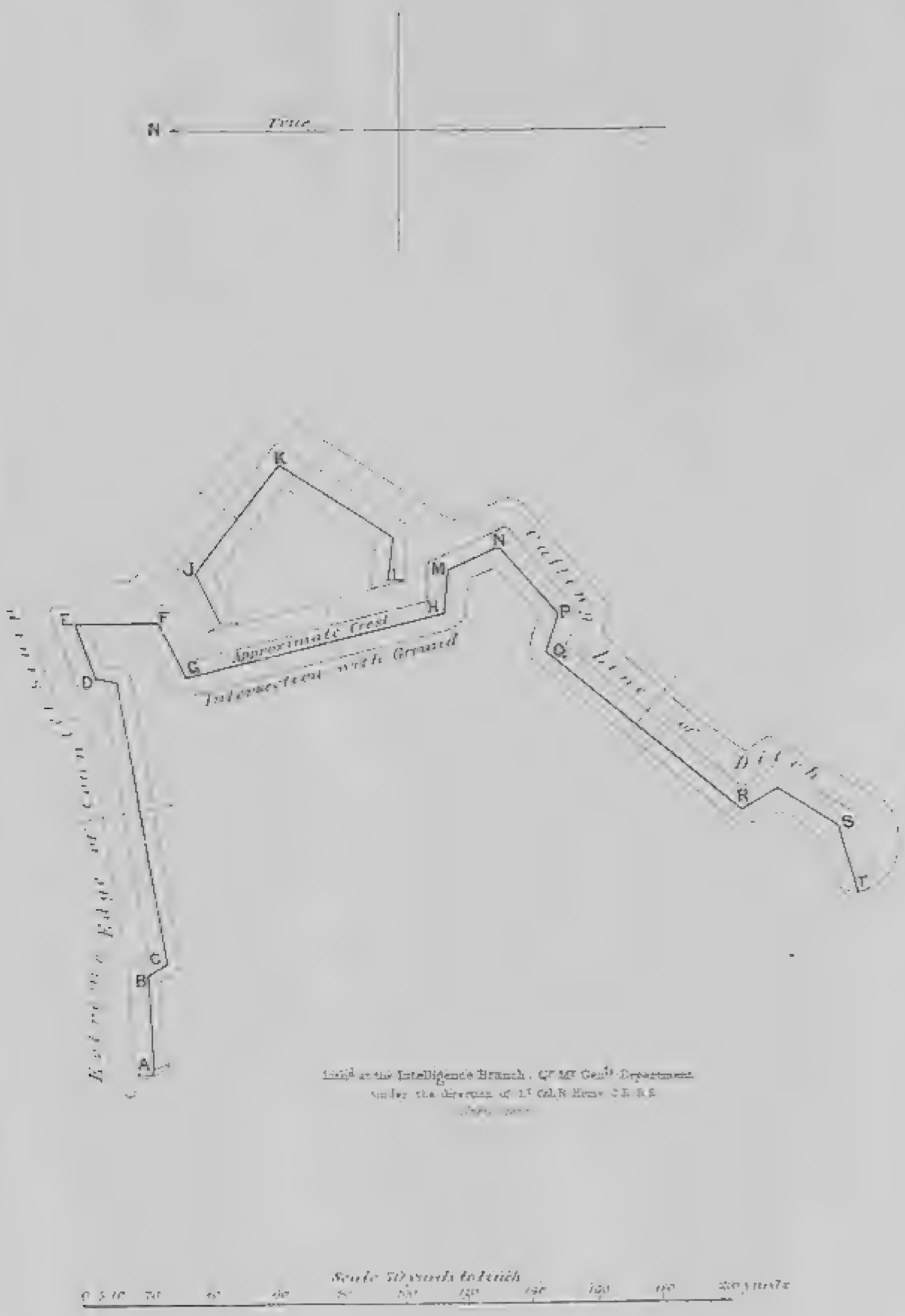
J. Fraser
Capt

BOULAIR LINES

SKETCH OF FORT VICTORIA

(PRESENT STATE) (A)

Vide Pl. III.



Lith^d at the Intelligence Branch, Q^r Mr Gen^ls Department
under the direction of Lt Col. R. Home C.R.R.E.

Scale 50 yards to 1 inch

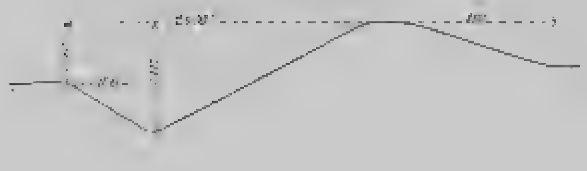
0 5 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 200 yards

Plate VI.

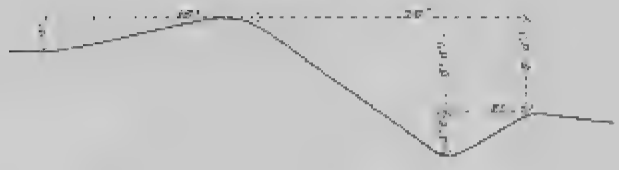
SECTIONS OF BOULAIR LINES

SHEWING EXISTING CONDITION ON 6.1.22.

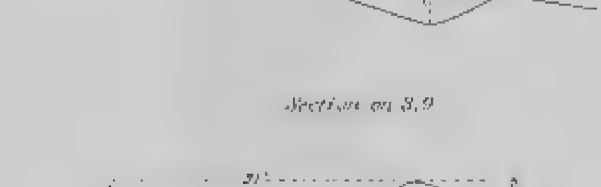
Section on 1,2.



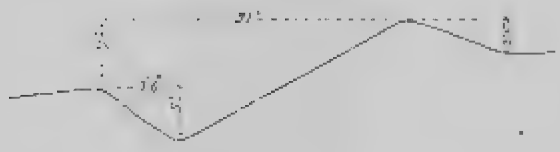
Section on 3,4.



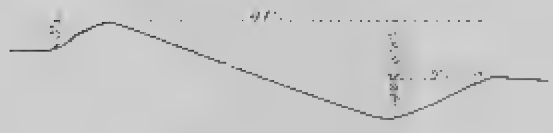
Section on 5,6.



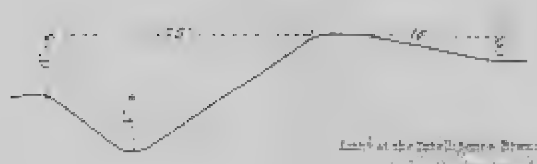
Section on 8,9



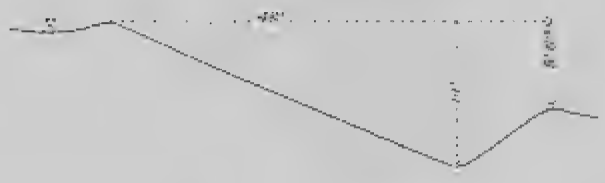
Section on 16,17.



Section on 29,32.



Section on 30,31



Scale of feet

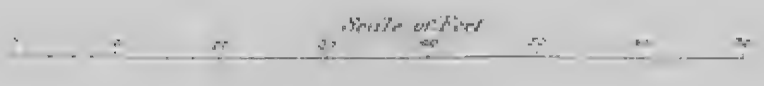
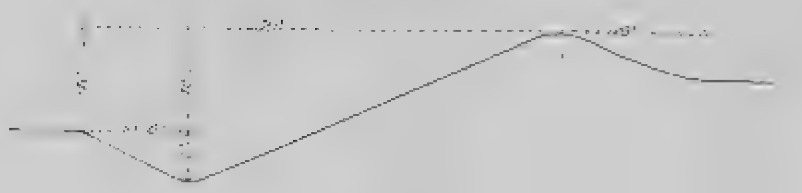


Plate VII.

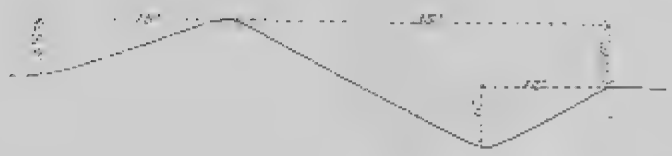
SECTIONS OF BOULAIR LINES

SHOWING EXISTING CONDITION ON 6.3.77

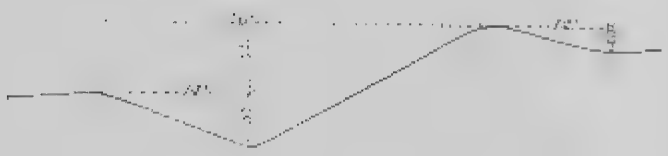
Section on 39, 40.



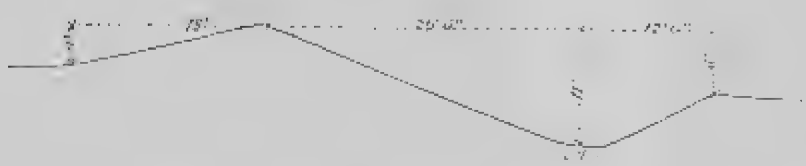
Section on 43,46.



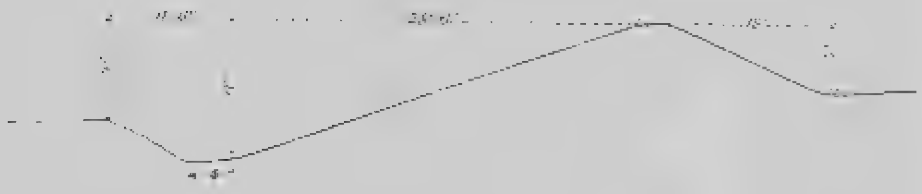
Section on 44,45.



Section on 52,54.



Section on 55,56.



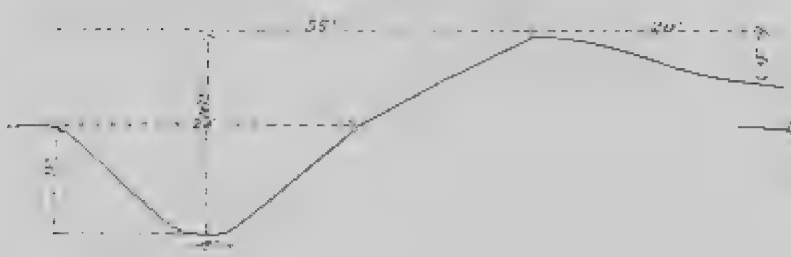
Section on 67,68

Section on 68,69.

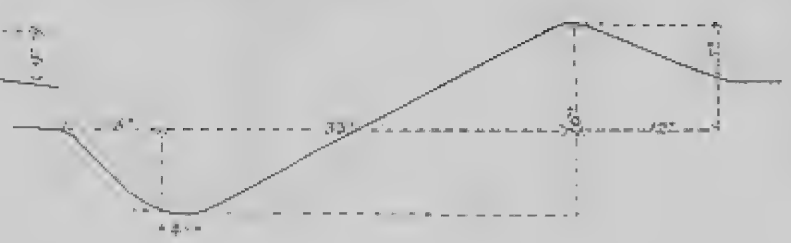
Scale of Feet

FORT VICTORIA

Section of Curtain C.D.



Section of Curtain Q.R.



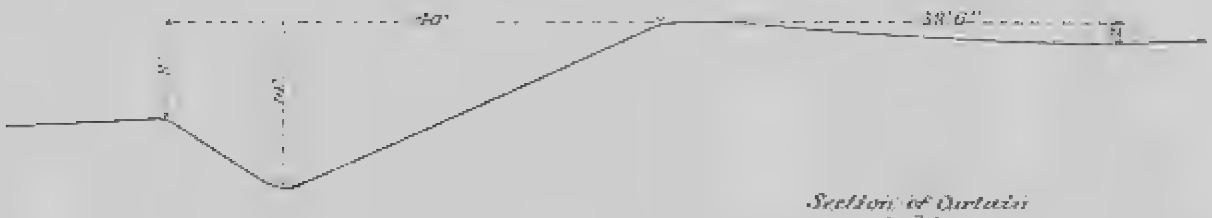
Section of Ditch G.H.

Section of Ditch J.K.

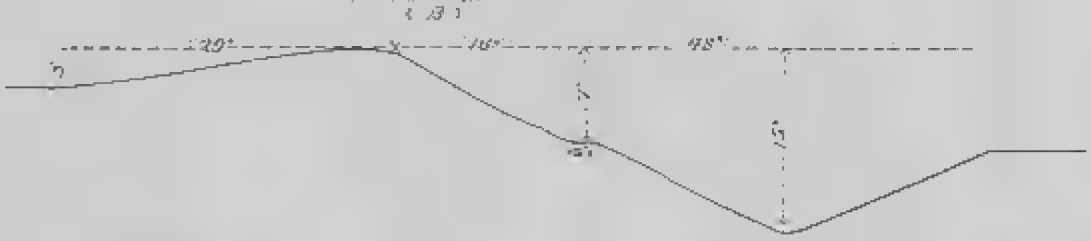
FORT NAPOLEON

Lith[d] at the Intelligence Branch, Q[r] M[r] Gen[l]'s Department
under the direction of Lt Col R. Home C.B. R.E.
April 1877

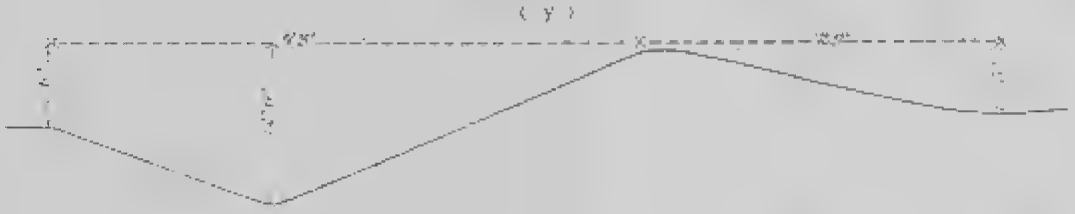
Section of Shoulder
(α)



Section of Curtain
(β)



Section of Face
(γ)



Scale of Feet

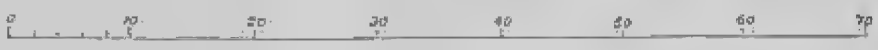
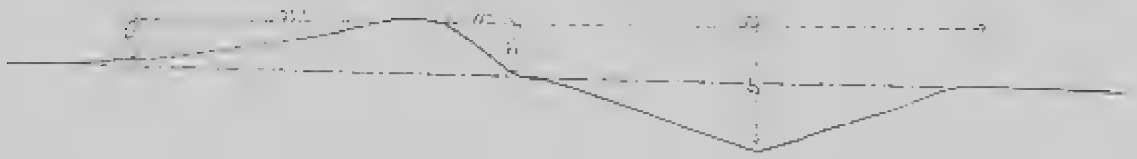


Plate IX.

BOULAIR LINES

SECTIONS OF FORT SULTAN

Section on $a_1 a_2$



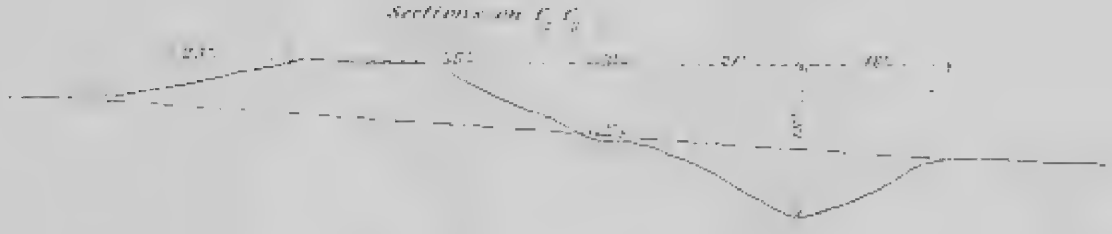
Section on $b_2 b_3$

Section on c_4 D

Sections on d_5 E

Sections on E_2 E_3

Sections on f_2 f_3



Scale of Feet

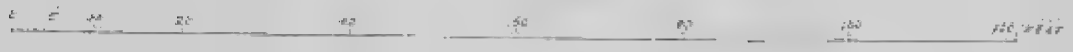


Plate X.

BOULAIR LINES
SKETCH OF FORT NAPOLEON

Scale 50 yards to 1 inch

0 50 100 200 300 yards

SKE

Proposed New Keep

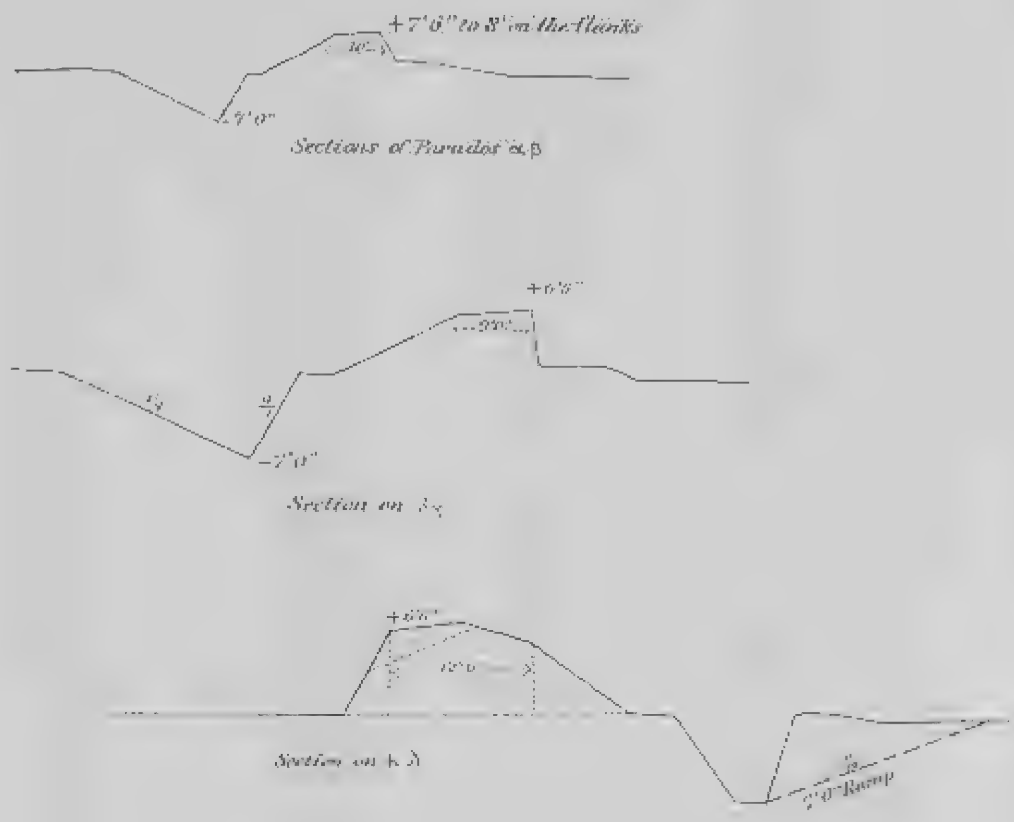
Proposed New Retrenchment

BOULAIR LINES

SKETCH OF FORT SULTAN

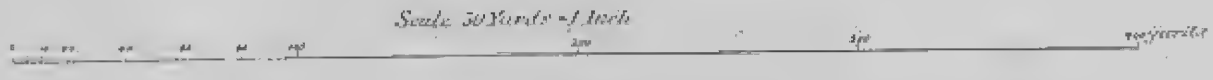
Plate XI

For sections see Plate IX

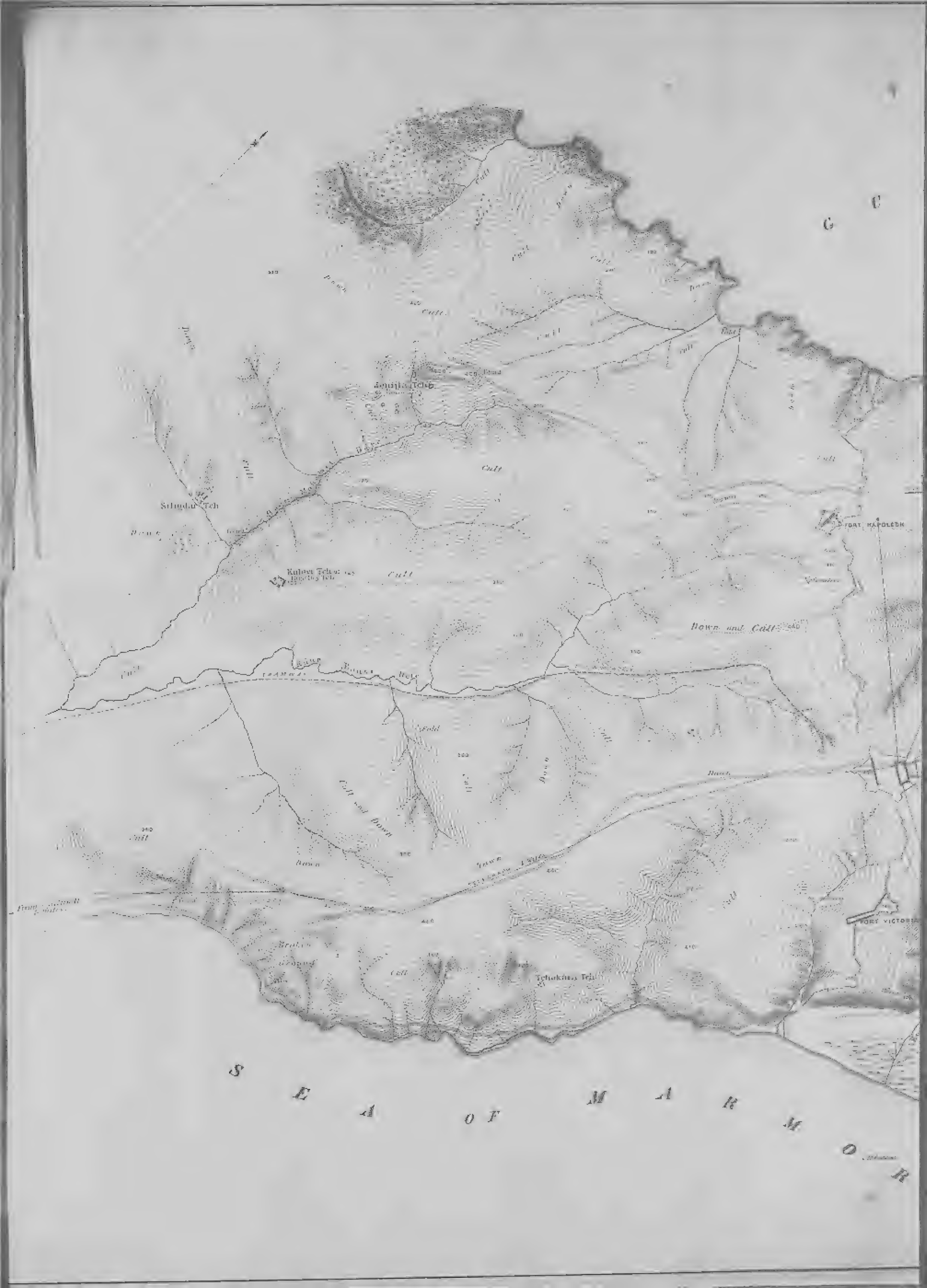


N.B. The ground from the front B.C. to the Salient F is a Ridge falling with a Slope of ½" to F
E & W of this Ridge the ground falls somewhat steeply to the flanks of the Fort
The depression from B.C. to Boulair Cemetery is about ½"
Proposed modifications are shown thus .....

Scale 50 Yards = 1 Inch

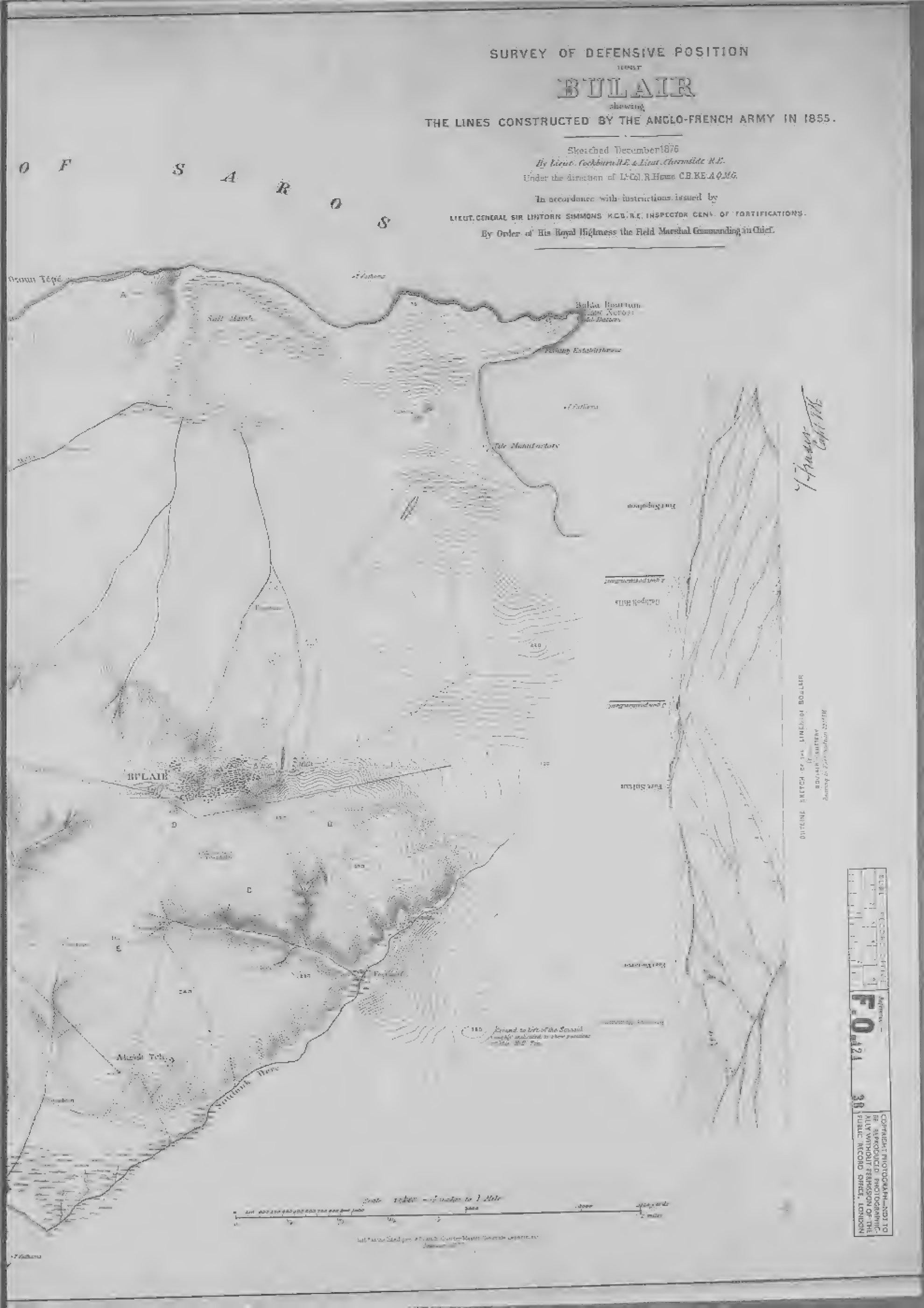


Lith. at the Intelligent's Branch, [illegible] Department
[illegible]
[illegible]



Cult
Down
Cult and Down
Down and Cult
FORT NAPOLEON
FORT VICTORIA
Tchukhun Tch
S E A O F M A R M O R

SURVEY
THE LINES CONSTR
LIEUT. GENERAL SIR LINT
By Order of H
GULF OF SAROS
Salt Marsh
FORT NAPOLEON
FORT SULTAN
BULAIR
FORT VICTORIA
Akrek Tch
Soulook Bere
R M O R A


SURVEY OF DEFENSIVE POSITION
NEAR
BULAIR
showing
THE LINES CONSTRUCTED BY THE ANGLO-FRENCH ARMY IN 1855.
Sketched December 1876
By Lieut. Cockburn R.E. & Lieut. Chermside R.E.
Under the direction of Lt.Col. R. Home C.B. R.E. A.Q.M.G.
In accordance with instructions issued by
LIEUT. GENERAL SIR LINTORN SIMMONS K.C.B. R.E. INSPECTOR GENL. OF FORTIFICATIONS.
By Order of His Royal Highness the Field Marshal Commanding in Chief.
O F S A R O S
Salt Marsh
Tile Manufactory
BULAIR
Fort Sultan
Fort Victoria
Ground to left of the Sawaid
Scale 1:2000 — 2 inches to 1 Mile
OUTLINE SKETCH OF THE LINES OF BULAIR
BOULAIR CEMETERY
Reference
F.O. 424 38
COPYRIGHT PHOTOGRAPH—NOT TO BE REPRODUCED PHOTOGRAPHICALLY WITHOUT PERMISSION OF THE PUBLIC RECORD OFFICE, LONDON

3. There is a position in front, that is, to the north of the village of Bulair, which might be held, but which would require a large expenditure of time and labour to put it in a state of defence. This position is indicated by the letters A, B, C, D, E on the tracing attached; which, when fitted over the plan of the ground, will indicate the points.

Permanent works might be placed on other sites.

I am not prepared to say that, if the object were to hold the Gallipoli Peninsula by permanent works, this line might not offer some advantages.

Difference between field and permanent works.

But I submit that one feature—which must distinguish Field from Permanent Fortification—is that, in the former, little or no preparation can be made by cutting down heights, and filling up hollows to open ground to fire. Ground must be utilized as it exists. In Permanent Fortification, when time is available, works may be defiladed by raising ramparts; and heights and hollows may be filled in.

Amount of glacis forming requisite to form the ground.

I have roughly estimated that, to render the advanced position secure, some 50,000 cubic yards of earth must be shifted on the glacis, so as to open the ground in front of the works to fire.

This in itself, I submit, forbids the idea of holding this position with field works, although it doubtless offers some advantages.

But, although it is possible that, if I were called on to submit a project for defending the Gallipoli Peninsula by permanent works, I might recommend the advanced line, I have no hesitation in submitting that the wisest course—in the present case—is to adopt the line selected in 1854, and utilize, as much as possible, the very large amount of work that has already been expended on it.

The village of Bulair.

By adopting this line we lose the village of Bulair; undoubtedly a great loss, but a loss which can be delayed for some time by holding the ground already indicated with field artillery and shelter-trenches, and not retiring into the main lines until the enemy has developed his attack.

Main features of the 1854 lines.

The main features of the Bulair lines, as constructed in 1854, are the redoubts, or forts.

Fort Sultan.

Fort Sultan, a very large hexagonal bastioned fort, occupying a commanding site, sees the ground well in front and to the flank. This work crosses fire on the right with a fort—called (I believe) "Victoria," and constructed by the French at a distance of some 850 yards, and with a pentagonal bastioned fort called "Napoleon" on the left, at a distance of about 1,800 yards.

Fort Victoria.

Fort Victoria, or that on the right, is a small work with a bastioned front and a ravelin. It is very well placed, but will require extensive modifications.

Fort Napoleon.

Fort Napoleon, on the left, is a small pentagonal bastioned fort, well placed, but too small for such a trace.

Connecting lines good but broken too much into front and flank.

The connecting lines are in very good order, and, although more broken into flanks and indents than I consider advisable, are yet excellent lines, and I do not suggest any alteration in their trace. In dealing with this question (*Vide* Plates II., VI., VII.), I submit that it is undesirable, except where some defect exists, to go to the labour and expense of throwing up fresh parapets and excavating fresh ditches, when the great mass of the earthwork is ready to hand. In fact, so far as the connecting lines between the forts are concerned, I should propose nothing more than forming banquettes, cutting the grass and weeds that have grown over the lines, reforming the slopes where requisite, making emplacements for guns at proper places, with the requisite field magazines, and generally traversing the lines.

Connecting lines to be repaired.

The result so obtained will, I submit, be more satisfactory, and the work will be executed more cheaply, than if an attempt be made to retrace the lines in consonance with modern ideas.

Not so, however, as regards the forts.

These, and not the connecting lines, are the true defences of the position, and the time and labour available should, in my opinion, be devoted to making these works as strong and perfect as possible.

Alterations in Fort Sultan.

Beginning with Fort Sultan (*Vide* Figs. 9, 11). This work is too large. It would require a garrison of 3,000 men. It has, however, a very good profile, and is in a very good state. It is proposed to repair the banquettes and slopes,

make emplacements for guns in the north, east, and west fronts, traverse the work generally, and construct a keep or inner intrenchment in it. This keep will be concealed from the front, not only by the slope of the ground, which falls to the south, but also by the parapet of the old work. But it will give a powerful direct fire across the front of the lines, and one which cannot be replied to, sweeping the whole front from sea to sea, while at the same time it will give a high-angle fire on the Bulair Hill.

This keep acts also as a great central traverse, and will protect the garrison of the work, who may be concealed in its ditch during the preliminary artillery fire, until required to man the works, in order to resist an infantry advance. Infantry so posted will be protected from pitching shell fire. The work may also be held with a much smaller garrison, as the three faces of the hexagon in rear will be completely swept by the intrenchment.

Fort Victoria.

Fort Victoria, on the right, requires large modifications. The ditch between the curtain and ravelin should be filled in, and the ravelin thrown into the main work. The work should also be enclosed, and emplacements for artillery and traverses formed. (Plate III., also Plates A. and VIII.)

In front of and between Forts Victoria and Sultan there is a piece of ground, which in former days was too far off to be dangerous. Not so at present, as an enemy can make his way up through the ravine that slopes to the east and get on this ground, which it is consequently proposed to occupy with a small enclosed work, marked I.

New redoubt. Redoubt No. 1.

This work sees down the valley parallel to the right front of the lines, which is otherwise unseen. It is well plunged into at short range by Forts Victoria and Sultan, and no enemy could hold it, if captured, for ten minutes (Plate 4).

Fort Napoleon.

Fort Napoleon, on the left. It is proposed to repair the bastioned trace in front, using it as a screen, to construct a strong rectangular redoubt, the front of which will fire over the screen, and to utilize a portion of the rear faces as a gorge for this work (Plate 10), and for section (Plate VIII.). There

Redoubt No. 2.

is a piece of ground in front which should also be held with a small redoubt, to see down a valley somewhat similar to that on the right flank (Plate 5). These works are generally indicated on the tracing that accompanies the field sketch, and which, when fitted over the sketch, will show their position. The actual details are shown in Figs. 4, 5, 9, 10, and 11. The great faults of these three redoubts, viz.:—

Present defects of the forts.

1. The absence of traverses.
2. The depth of the works, as compared with their front of fire.
3. The complications introduced by attempting to defend the ditches with bastions.
4. The want of an inner work or keep will, it is considered, be remedied by the measures proposed.

The alterations here proposed will, it is conceived, render these lines very formidable works.

As regards garrison, the report $\frac{E}{6}$ gives a detail of the proposed garrison.

Armament.

The armament in addition to four batteries of Field Artillery (it is proposed) should be 28 guns, viz.:—

7-inch guns	8
40-prs. „	20
Total	28

Distribution of guns.

It is proposed to distribute these guns as follows:—

Fort Sultan—7-inch guns	6	
„ 40-prs. „	8	
	14	14
Fort Victoria—7-inch guns	0	
„ 40-prs. „	6	
	6	6

Fort Napoleon—7-inch guns	2	
„ 40-prs. „	4	
	6	6
Generally, between Forts Sultan and Napoleon		2
Grand Total		28

Should 40-pr. guns not be available, a certain number of 20-pr. guns might be substituted.

20-prs. may be substituted for a portion of the 40-prs.

The four field batteries it is proposed to place in the two advanced works, and in gun pits behind the connecting lines.

The armament and force (proposed to hold an intrenched position of three miles in length) may appear excessive, but it is evident that, in case of a Russian invasion of Turkey, the Russian commander might, and probably would, strike at these lines, using the Adrianople—Enos line for supply, as by so doing he would deliver his blow at the communication of the British lines rather than on the front.

Reasons for large armament.

If the lines be carefully constructed and supplied with the armament asked for, they would be undoubtedly defended against anything but a very long continued attack by a superior force with guns of position, by a force of 6,000 or 7,000 men.

But the garrison of the Buyuk-Derkos line has been calculated at a minimum; it is requisite to have some general reserve for the army, and the Gallipoli force would furnish such a reserve—probably better than the main force at Buyuk-Derkos.

Reserve to be at Gallipoli.

The reasons for placing the general reserve at Gallipoli, rather than in rear of the longer lines of Buyuk-Derkos, are:—

Reasons for this.

1. Viewing the defences of the Bosphorus and Dardanelles, as a whole, in the light of a British Army defending Constantinople, the Bulair or Gallipoli lines form really the vital point of the whole.

2. It is much easier to embark troops of all arms at Gallipoli than it is at either Makra-keui or (taking the state of the City of Constantinople into account) the Golden Horn. Troops may be embarked in all winds at Gallipoli, while there would be some difficulty in doing this in certain winds at Makra-keui.

3. Having recently ridden from Constantinople to Gallipoli, I was much struck with the peculiar advantages presented by the shore near Bogados (or Pivatos) for a disembarkation to threaten the flank of an enemy who should be in position in front of the Buyuk-Derkos lines. Ships can here approach quite close to the shore, which is a low sandy beach, under fire from the fleet. A force could be here landed easily, and the very knowledge that such could be done would make an enemy very nervous for his right flank, and his best line of communication with Adrianople. He would, therefore, be compelled to detach largely to cover his right flank, which would be a difficult operation.

4. Theoretically speaking, the reserve for the two lines Buyuk-Derkos and Bulair might be best kept on board ship ready to be thrown ashore at once at either place; but, as that is out of the question, it appears that the next best thing is to keep the reserve at Gallipoli.

5. The defences of the Dardanelles themselves will also require guarding, and this duty naturally falls to the Gallipoli corps.

6. This arrangement dislocates to a much smaller extent the organisation of the English force, as pointed out in the paper $\frac{E}{6}$.

In the report $\frac{A}{6}$, the necessity of obstacles to detain an enemy under fire in front of the Buyuk-Derkos redoubts was pointed out, and the difficulty of making such obstacles was referred to.

Difficulties of getting materials to make obstacles.

The necessity for obstacles in front of the Bulair lines is as great, and the difficulty of making them greater than at Buyuk-Derkos.

There are absolutely no trees available to make abatis. There is a small quantity of scrub wood, about four miles north of Bulair, and a large quantity about 20 miles south of Gallipoli. This is the whole of the timber available. The former may be carried on arabas; the latter may be brought by sea to the eastern end of the line, and then landed.

Wire entanglements.

The mainstay for obstacles must be wire entanglements, which should be used largely along the whole front. By placing these entanglements well under the fire of the lines, they will prove very effective. A single wire run along the exterior crest of the parapet, some two feet above it, and strongly attached to pickets driven into the parapet, will also be of value.

R. HOME,
Lieut.-Colonel, R.E.

BULAIR, *9th January* 1877.

Inclosure B *in No.* 16.

LINES OF COMMUNICATION.—BULAIR LINES.

The main communication is from Gallipoli to Bulair.

Roads very bad.

This road, at this season, is one of the worst in Turkey; it is barely nine miles in length, and it takes three hours to ride. For more than half way the horses are up to their knees in thick tenacious mud; for the remainder the road passes over a pavement of large stones thrown confusedly together and coated with slippery mud.

In summer time this road doubtless is good, because all the country is then hard, and any place may be used as a road.

But it is believed that, at this season of the year and up to the end of April, wheel traffic would soon render it impassable.

Tramway requisite.

To meet this difficulty there is nothing but to construct a tramway from Gallipoli to the lines. A railway, owing to the gradients, would be a difficult and costly enterprise; but a tramway may, as already stated, be easily made.

Rails and sleepers in sufficient quantity—the property of the Turkish Government—exist, and are available, while the rolling-stock for the purpose may be easily brought from the Scutari and Ismidt line. A road should be constructed at a distance of some 300 to 500 yards in rear of the lines, in such a manner that troops moving on it may be kept under cover as much as possible.

Roads to be made.

Road material.

The materials for this road will be difficult to get. A certain portion of shingle and gravel for that portion of the road near the flanks may be obtained from the beach; but the greater portion must be obtained from Gallipoli and the hill north of Bulair.

It being proposed to place the head-quarters at Rija Bey Tchiftlik, a short road must be made to that place.

Otherwise the communications are easy and require no alteration.

R. HOME,
Lieut.-Colonel, R.E.

9th January 1877.

To accompany C 16

Cultivated Plateau

Vineyards

Vineyards

Well

Cemetery

Vineyards

Old Light Ho

Rocks

Proposed Depot & Jetty

Sandy Beach

Fountain

Barrack

Windmills

Fountain

Lighthouse

Fountain

Cemetery

Fountain

GALLIPOLI

Old Citadel

Fort

Rocks

Cultivation

Cultivation

Thickets

Thickets

Scrub

Ruins

Cultivation

Fruit Trees and Vines

Banks and Ditches

Low Earth Bank

Ancient Dere

Ancient Dere

SEA OF MARMARA

DARDANELLES

Published at the Intelligence Branch for the use of the Expeditionary Force under the direction of Lt-Col. R. Home C.B. R.E.

March 1915

Enclosure C in No. 16.

STORE DEPOT AND LANDING PLACES.

In any landing that may be effected on the Gallipoli Peninsula for the purpose of occupying the Boulair lines, as laid down in the instructions under which these reports are prepared, Gallipoli itself affords undoubtedly the best place, not only for landing but for forming the Store Depôts.

The old port of Gallipoli is of little use, it is very confined, and there is only a depth of six feet of water in it at present. A sketch of this little port is attached to the road report, covered by Despatch No. 19. It may be utilized for local traffic such as that carried in the large coasting caiques, which would bring Commissariat supplies, but should, so far as the landing of heavy stores and troops is concerned, be left entirely out of consideration.

There are two places available for landing troops and one for landing stores.

In fine weather, or even with a southerly wind, the best place for landing troops is that to the eastward of the town and north of the old Lighthouse. The troops and their light baggage, with the artillery horses and guns may be disembarked on a firm sandy beach some 1,500 yards in length, and within 200 to 400 yards of the Gallipoli and Boulair road. By landing at this point the troops can at once march on the lines, and avoid the narrow and intricate streets of Gallipoli itself. There is plenty of good water close to the landing, and good camping ground on the slope of a hill facing to the south. Should the weather permit, a landing on this beach would be the most advantageous, as, however, the wind will more probably be from the north than the south, the prevailing winds being from that direction, it may be impossible to land on this beach—and a landing for the troops must be sought to the westward of the town. The landing here is very good, on a firm sandy beach about 2,000 yards in length, and there is a small stone pier where the horses and guns may be quickly disembarked. So far as the immediate landing is concerned the beach to the westward of the town leaves little to be desired. But troops thrown ashore at this place, would have to pass through the narrow streets of Gallipoli on the way to Boulair, and there would be some difficulty in clearing the beach as quickly as is desirable. In summer time troops could move over the country to the north of the town, and so gain the Boulair road, near the Barracks; but at other seasons this would be impossible; the decision as to the actual place for disembarkation, whether to the east or west of the town, can be made only at the moment, with reference to the wind and the season of the year.

As regards the Store Depôt the small bay north of the new Lighthouse affords great facilities. The water is deep, and there are considerable facilities for running out wharves, at which boats and lighters can discharge; these wharves being placed in connection with the line of tramway referred to in report $\frac{n}{90}$.

It would be desirable in the first instance to use the large Turkish Barrack as a store until proper store huts could be erected. But the barrack is too near the town to be used as a store except as a temporary expedient, and it will be preferable to construct store huts on the site shown on the sketch.

At this place also the hospital should be placed; there is a good supply of water here. It was the site used as a hospital by the French Army in 1854, and was found to be very healthy and well suited for the purpose.

There is good shelter under the lee of the old Lighthouse point for vessels, and the little bay will contain four large ships at all times.

By forming the Store Depôt at the place indicated on the sketch, all danger of fire would be avoided and a small enclosure would cut off the store huts and afford ample protection. On the Asiatic shore of the Dardenelles, about nine miles distant at Lampsaki, there are large saw-mills, and it is believed that a sufficient quantity of timber, to construct the wharves and huts, could be procured here without much difficulty.

R. HOME,
Lieut.-Colonel R.E.

Inclosure D in No. 16.

TELEGRAPHS AND SIGNALLING.—BULAIR LINES.

The Gallipoli Peninsula is intersected by a line of telegraph poles carrying four wires.

Use of existing telegraphs.

It will be requisite to establish an office in each fort, connect them with the main lines, and connect the forts by a line running along the whole front, in rear and under cover.

Lines under the cliffs.

To prevent accidents arising from fire, which might cut these wires, it will be advisable to carry short wires from the flanks of the lines under the cliffs along the shore. These lines should be brought into Rija Bey, Tchiftlik (which it is proposed to make the head-quarters), and an additional line to Gallipoli should be sent along the existing poles.

Signal stations.

A large shutter signal apparatus, with means for night signalling to communicate with the ships, will be required at Gallipoli; and a similar apparatus in rear of the lines on each flank in connection with the wires passing under the cliffs, so as to communicate with the ships supporting the flanks in the Gulf of Saros, and the mouth of the Dardanelles.

By these means each fort will have three alternative wires to communicate with the rear. It is most unlikely that all three means of communication will be cut on the same day by any fire however heavy.

Number of operators required.

Operators at the rate of three per office and three per signal station will be required.

The following therefore will be required from England:—

Large fixed shutters, with lamps for night-signalling and all materials for fixed stations	.. .. ..	3
Telegraph Offices—for the forts	.. .. ..	5
" " for the signal stations	.. ..	3
" " for head-quarters at Rija Bey, Tchiftlik	.. ..	1
" " Spare	.. ..	1
Total	.. ..	10

R. HOME,
Lieut-Colonel, R.E.

9th January 1877.

Inclosure E in No. 16.

REPORT ON THE QUARTERING OF THE TROOPS IN THE GALLIPOLI PENINSULA.—BULAIR.

The difficulties of quartering the troops are about the same as in the case of the Buyuk-Derkos lines.

As submitted in the case of the other lines, it is proposed to construct

here, under shelter from fire, and as close to the redoubts as will admit of their being concealed, huts for 1,500 men as a *garnison de sûreté*.

Quartering the troops in huts. Villages.

About 2,000 men may be placed in the village of Bulair, and about 250 in the Tchiftlik Emin Bey.

Town of Gallipoli.

The remainder it is proposed to quarter in the town of Gallipoli, itself eight miles from the lines, where there is ample accommodation.

The force at Bulair and in the huts would be ample to hold the lines until supported from Gallipoli. The large stables that exist in Bulair will hold 800 horses.

And canvas camps.

These arrangements would suffice until the summer was sufficiently advanced to place the troops under canvas.

When the troops are placed under canvas, sites for camps can be found—well situated, sloping to the south on grass land, on each side of the Kiune Boasi Déré and the Hadji Mahomet Déré. The streams in these valleys are said to be perennial, and by digging a little in the soil large supplies of good water may be obtained. The camps are so near the water that no special arrangements for water supply are required.

Water is available on the right of the line, also in the deep valley to the south of Fort Victoria. On the left of the line it is more difficult to get, and it would have to be brought some distance, although some wells of indifferent water exist in front of the lines.

Nothing can be better suited for encamping troops than the ground already referred to, which should be used by the British troops. The auxiliary troops should be camped lower down on the same stream, or on the reverse slopes of the ground in rear of Fort Victoria.

Supplies.

As regards supplies, statistical tables showing the productions of the Peninsula, and what can be expected from it, are forwarded herewith.*

The remarks in ¶ as to supplies, blankets for horses, waterproof sheets, &c., are all applicable to the case of troops encamped in the Gallipoli Peninsula.

Fuel is difficult to obtain, and must be brought from the south end of the Peninsula, or from the Asiatic side, in boats.

9th January 1877.

R. HOME,
Lieut.-Colonel, R.E.

MEMORANDUM.

The tables showing the supplies that may be obtained in the Gallipoli Peninsula, and the military resources of that Peninsula, were attached to a private and confidential memorandum forwarded to the Inspector-General of Fortifications on the 12. 1. 77. This memorandum being a copy of a document furnished to Lord Salisbury by his lordship's direction.

It is requested that duplicates of those tables may be attached to this memorandum, in order that it may be made complete.

The Queen's messenger leaving three days sooner than was expected is the cause why duplicates are not now attached.

9th January 1877.

R. HOME,
Lieut.-Colonel, R.E.

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* Forwarded with confidential Memo. to I.G.F., 12. 1. 77, *vide* Note attached to this paper.

VILLAGES BELONGING TO GALLIPOLI VILAYET.

Names of Towns and Villages.	Barley.	Wheat.	Oxen and Buffaloes.	Sheep and Goats.	Arabas (Native carts).	Labourers.	Male Population.	No. of Houses.	Remarks.
	Bushels.	Bushels.	Pairs.						
Gallipoli and adjacent farms ..	4,635	45,595	250	1,729	150	2,560	4,839	2,096	The wheat and barley of the village of Havalli, and the grain of those of Amourgikeïn, Mounup Bey, Sclamsiz, and Carid Pacha, are included in amount given for the town of Scitankeïn.
Bulair (Turks and Greeks) ..	5,850	26,275	150	3,960	115	560	879	361	
Eksamil (Greeks)	2,535	13,900	90	3,516	50	270	439	145	
Yenikeïra „	1,640	16,360	60	2,942	60	673	1,004	431	
Scitankeïn „	3,450	11,870	80	4,550	47	620	870	391	N.B.—This memorandum was sent to me by His Excellency the Governor. The villages of Evrécké (Yenikeïn), and Rouak belong to the Caza of Charkeïn, but His Excellency has informed me that the first, excepting that its inhabitants are Turks, may be estimated to contain the same as the village of Bourganli; and that the village of Evrécké would supply nearly 100 camels for transport. The horses for transport in the other villages may be estimated at about 100.
Kavack „	..	..	60	1,246	12	28	33	21	
Pergase „	585	4,820	30	2,068	30	336	466	228	
Taïphir „	980	7,725	35	4,171	35	533	740	338	
Pazarti (Turkish)	1,060	2,345	30	399	13	40	58	32	
Bourganli „	1,045	2,025	22	604	15	70	109	47	
Tjimnle „	625	1,075	13	314	8	33	48	18	
Tjivizli „	655	1,755	40	969	19	37	59	29	
Bair (Greek)	1,845	6,775	60	806	40	453	664	264	
Galata „	1,195	6,345	50	389	60	330	492	206	
Total	26,460	147,965	970	27,661	654	6,543	10,700	4,597	

Gallipoli, 9th January 1877.

VILLAGES BELONGING TO DARDANELLES VILAYET.

Names of Villages.	No. of Houses.	Approximate Population.	Labourers.	Buffaloes and Oxen.	Arabas (Native carts).	Horses and Camels for Transport.	Sheep and Goats.	Cattle for food.	Wheat.§	Barley.§	Remarks.
				pairs.					bushels.	bushels.	
Naïtos (Greek)	1,000	5,000	300	250	200	300			12,000	7,000	* On account of the numbers of men taken for military service, there are very few labourers left in the Turkish villages.
Crithia „	350	1,500	100	200	120	120			7,000	6,000	
Setit Bahar (Turkish)	130	400	*	25	15	15			3,000	1,700	
Ketit Bahar „	280	800	*	12	5	5			1,300	700	† The shepherds having no fixed grazing ground often wander with their flocks from village to village.
Kodja-Dérá „	15	60	*	25	20	17a			1,400	700	
Bohali „	30	100	*	45	50	40			2,400	1,600	
Yalova „	70	250	*	60	70	70			4,000	2,000	‡ The greater portion of the cattle for food are found about Torsoun, Sirlia, and Anafarta.
Bazikeui „	10	25	*	10	8	10			1,000	600	
Olgurderé „	50	180	*	60	30	30			5,000	1,100	§ There is a scarcity at present of wheat and barley, there being hardly enough for the use of the inhabitants without having recourse to imported grain.
Sirlia „	50	100	*	25	20	20			2,000	1,600	
Kunkeui „	10	31	*	17	10	5			800	250	
Ozounderli „	10	35	*	10	8	6			800	250	
Kitchili „	30	70	*	35	20	20			1,400	600	
Carnabeli „	90	400	*	70	70	50			12,000	2,600	
Torsoun „	40	150	*	50	30	30			8,000	1,700	
Anafarta, Grande (Turkish) ..	90	300	*	120	60	58b			7,000	1,600	
Anafarta, Petite „ ..	120	400	*	100	50	30			6,000	2,600	
Total	2,350	..	..	1,114	786	826	..	..	77,100	30,600	

From 25,000 to 40,000.†

From 100 to 600.‡

Gallipoli, 9th January 1877.

a Of which 7 camels.

b Of which 8 camels.

Inclosure F in No. 16.

THE ENEMY'S POSITION.

Memorandum.

An enemy, before he attempts to attack the Gallipoli position, must hold firm possession of Roumelia and have captured Constantinople, or be in such force as to able to leave a containing force in front of the Buyuk-Derkos line.

He must hold Adrianople, Rodosto, and Enos firmly, and must be in complete and peaceable possession of the rich valleys of the Maritza and Ergine, from which he can draw his supplies.

His rear must be perfectly secure from attack by Burgas; and his communications with the Danube must be safe from any possible attack from Varna.

Under such conditions only can an enemy, not possessing the command of the sea, attempt the attack of the Bulair lines.

There are four roads that an enemy, circumstanced as above described, may use; it is likely that he would try to use all four, viz:—

1. The Lüle-Burgas—Rodosto—Myriophyto—Scharköi—Bulair road.
2. The Rodosto—Kostamboli—Kawak—Bulair road.
3. The Adrianople—Malgara—Kawak road.
4. The Enos—Kawak road.

It will be observed that the last three roads converge on Kawak, which thus becomes a point of much importance.

From Kawak, south, there are but two roads—the east and west coast roads—which both converged at Bulair, whence one road leads directly on Gallipoli.

The road that skirts the Sea of Marmora is shut in between the Tekir Dagh mountains and the sea. These mountains attain a height of some 2,500 feet, are very steep and precipitous; their sides are clothed in places with stunted scrub, but are usually bare and barren. These mountains are crossed by two tracks—viz., that leading from Kostamboli, or Semitli, or Ganos—a rugged path, quite unfit for troops—and that from Malgara to Scharköi, which is said to be a fair araba road, and consequently one over which an army could move.

An enemy attempting to move a column along the coast road would also, in many places, be exposed to the fire of ships.

It is not likely that any large force would take this road, except with the view of seeking supplies in the villages and the rich narrow belt of country between the sea and the mountains.

The road from Rodosto, *viâ* Kostamboli, is a fair country road, leading nearly all the way through a rich and fertile country. It is one which an enemy would, in all probability, select.

The roads from Malgara to Kawak, and from Enos to Kawak, are said to be very good araba roads. They have not been examined. There is a very strong position on the Serjan Tepé, which completely closes the Kostamboli road, and which—so long as it is held—denies the use of that road to an enemy. This position is about four miles north of the village of Jenikoi. It can, however, be turned by Kawak and the Marmora coast road.

If an enemy does not attempt to use the Marmora coast road (and it is not likely that he would dare to do so) the river Kawak offers a good position to check his advance. The river is crossed by a bridge, with stone piers and wooden roadway, which can be easily destroyed; and the river, which is impassable in winter, and difficult to ford in summer, has steep muddy banks.

A small force holding this position could easily delay an enemy's advance, whether he were to come from Kostamboli, Malgara, or Enos; but the position is too extensive, and would be soon forced. It, however, should be held, but held with the view of checking an enemy, not fighting him.

The ground from this point to Bulair is peculiarly well adapted for the retreat of a small force which, if judiciously handled, may cause much delay and inconvenience to an advancing force, compel it to halt and deploy before it advances, and retain it under fire of the ships.

The position north of the village of Bulair has been already referred to. As an enemy moving south advances on Bulair, he will find himself in front of a very strong position, cut off from the rest of the Peninsula by the Souioné Déré; a deep valley, with very steep banks on the southern side. This

position, which the defenders will hold as an advanced position, would be that extending from the Paboutchati farm to some distance east of the Paptchali farm. To force the defenders to retire from this position, the assailants would have to extend to their flanks, and attempt to pass the salt marsh on the west and the mouth of the Souioné Déré. Neither operation is in itself difficult, but it must be accomplished under fire of ships in the gulf of Saros and Sea of Marmora—a fire which would, in all probability, compel an attacker to make his advance, either very early in the morning, or late in the evening.

There can be no doubt but that the defenders must sooner or later fall back on the main position, and yield the Bulair Hill to the enemy. On reaching the crest of this hill he will at once see Fort Victoria and Fort Sultan, with the greater portion of the lines before him, and will be exposed to a high angle fire at a range of 3,500 yards from the 7-in. and 10-pr. guns mounted in the works.

The advanced portion of the enemy's troops will probably occupy the Souioné valley, but the large mass of his force must face both seas, east and west, so as to be ready to repel a hostile attack from the navy, and to seek shelter from the fire, which the fleet can bring to bear on them at many points.

Thus it will be observed that the attacker cannot sit down and deploy his force to embrace the lines, and bring a cross fire to bear on them. He must remain, as it were, in column, in the centre of the Peninsula, with the head of his column checked by the fire of the works.

Here is one of the peculiarly strong features of this position—viz., that it is impossible for an enemy to use superior numbers, and attempt to embrace or surround it.

The only advantageous piece of ground he can occupy is the Bulair Hill, and this is very limited in extent, and swept by a heavy cross fire from the lines, which are nearly quite straight in their general contour, and offer no point or salient to be crushed.

The narrowness of the front that an attacker could thus occupy, and the superior development of fire obtained from the lines, as selected in 1854 by the Anglo-French armies, form the chief reasons why it has been recommended to retain those lines, while yielding the Bulair Hill to an enemy.

The advantages which, in most attacks, the attacker possesses, of being able to outflank his opponent, being here—by the action of the fleet—transferred to the defender; and the advantages which an attacker similarly possesses of surrounding, embracing, and throwing a cross fire on certain points of the enemy's position, being also transferred to the defender, because the only ground from which an enemy can open fire on the main defences of the position is so very restricted that the defender's line is the longest and his fire a converging one.

CONSTANTINOPLE,
15th January, 1877.

R. HOME,
Lieut.-Colonel, R.E.

Inclosure G in No. 16.

MEMORANDUM of stores required from England for the construction of the Bulair lines, in *addition* to those included in the list $\frac{9}{8}$, under the supposition that the lines are constructed on the first supposition referred to in the "Memorandum on the actual construction of the lines," viz., as a portion of the larger work at Buyuk-Derkos.

Fixed signal stations for communicating with ships by night and day, number	3
Telegraph offices complete, with all requirements, number	10
Wire, No. 14 (B.W.G.), miles	10
" No. 12 (B.W.G.), miles	10
Insulators for 30 miles of telegraph	35
Bags, sand (tarred), number	Sufficient
Netting wire for revetments, yards	20,000
Felt roofing, yards	3,000
	50,000

12th January 1877.

R. HOME,
Lieut-Colonel, R.E.

PUBLIC RECORD OFFICE, LONDON

Inclosure H *in No.* 16.

MEMORANDUM ON THE BEST MEANS OF RECONSTRUCTING THE BULAIR LINES.

These lines may be viewed either:—

Two suppositions:—one, a friendly, the other, a forcible occupation.

1. As part of a general plan for the defence of Constantinople against an enemy coming from the westward; or

2. As a means of defence constructed by England to enable them to hold the Gallipoli Peninsula and the Dardanelles for their own ends, and against all comers—Turks or Russians.

Lines may be made under the idea of a friendly occupation, in the same way as at Buyuk-Derkos.

In the former case, the reconstruction of these lines would form a natural sequence to the construction of the Buyuk-Derkos Line, under the contracts with Mr. Hanson, referred to in my letter, No. 7, of the 19th December, 1876.

Works requisite.

The works to be executed would be the following:—

1. Remodelling Fort Sultan, Fort Napoleon, and Fort Victoria, and the two small redoubts in front. Repairing the connecting lines, constructing platforms, traverses, magazines, and shelter.

2. Tramways and roads.

3. Huts.

4. Telegraphs.

Sappers' work rather than earthwork required.

A large quantity of what may be termed sappers' work, in contradistinction to ordinary earthwork, would be required. This would consist chiefly of forming interior slopes to the lines. On the Buyuk-Derkos Line it was proposed to make all these revetments of hurdle work, which can be admirably executed by the natives of this country, and for which ample materials exist.

Difficulty of obtaining materials for revetting.

Not so on the Gallipoli Peninsula. The absence of such means renders this resource impossible. It is proposed, therefore, to substitute wire netting and sand-bags, to be sent out from England, as the only means by which this difficulty can be overcome.

Number of labourers required.

It is conceived that the labour of 1,500 men for six weeks on the lines, and of 500 men for four weeks on the tramway, would complete all that is requisite before the arrival of troops from England.

The stores existing in Constantinople would be ample for the purpose, no further demands than the additional articles asked for in Paper G being required from England.

Such would be the method of reconstruction under the case first put—viz., that these lines would form a portion of the final scheme for the defence of the Dardanelles and Bosphorus.

Method of constructing works under second supposition.

In the latter case, in which England would seize the Peninsula and hold it, the difficulty would be greater. A certain proportion of labour (say about 800 men) could be obtained on the spot, but no work could be begun until the force to hold the lines arrived, when the local labour would become available.

A large proportion of sappers should accompany such a force, and large supplies of material would be required from England, the stores at Constantinople in private hands or in possession of the Turkish Government not being then available.

As the contingency here contemplated may happen, the plans and sections of the forts are submitted in greater detail than those sent for the Buyuk-Derkos line, and a special list of stores to be sent from England is appended to this paper. But it should be remembered that these stores would not be required under the circumstances contemplated in the first portion of this Memorandum.

As the case here referred to may occur, it should be remembered that 10,000 British troops are ample for the purpose, and that the force referred to in Paper $\frac{E}{n}$ as forming the Gallipoli corps includes the general reserve for the Buyuk-Derkos lines, as well as those of Bulair.

R. HOME,
Lieut.-Colonel, R.E.

BULAIR, *9th January* 1877.

LIST OF STORES requisite to accompany an expedition disembarking in the Gulf of Saros, as referred to in the second paragraph of the attached paper.

Bags, sand	..	..	50,000
Axes, pick	..	..	3,500
,, hand	..	..	150
,, curved hickory handles	..	..	500
Shovels, field pattern	..	..	3,500
Spades	..	..	250
Rammers	..	..	200
Tapes, tracing	..	..	120
Lines, Humbro'	..	..	300
Netting, wire, yards	..	..	3,000
Stones, grind, large	..	..	10
,, field service	..	..	50
Levels, field	..	..	20
Rods, 6 ft.	..	..	50
Sappers, steam, with sawing machines and general joiner	..	..	1
Deals, 3-in., No.	..	..	3,000
Timber, scantling, 6 in. × 6 in., feet	..	..	9,000
,, ,, 12 ,, 12 ,,	..	..	1,000
Felt, roofing, yards	..	..	3,500
Carpenters' tools, chests	..	..	25
Smiths' ,, ,,	..	..	6
Forges, portable .. ,,	..	..	3
Ropes, 1-in., coils	..	..	6
,, 2-in., ,,	..	..	12
,, 3-in., ,,	..	..	5
Blocks, snatch, 9-in.	..	..	3
,, ,, 10-in.	..	..	2
,, ,, 12-in.	..	..	2
,, single, 9-in.	..	..	6
,, ,, 10-in.	..	..	3
Blocks, single, 12-in.	..	..	2
,, double, 9-in.	..	..	6
,, ,, 10-in.	..	..	3
,, ,, 12-in.	..	..	2
Spikes, 10-in., lbs.	..	..	500
,, 8-in., ,,	..	..	1,500
,, 6-in., ,,	..	..	1,000
Nails, clasp, 3-in., lbs.	..	..	2,500
Knives, gabion	..	..	50
Sledges, 7 lb.	..	..	100
Hammers, claw, large	..	..	250
Saws, cross-cut, with sets	..	..	20
,, hand, 30-in.	..	..	100
Tramway, light, with sleepers, plate-laying tools, and intrenching tools, sufficient to make, miles	..	..	10
Trucks for ditto, light, with small wheel-barrow	..	..	70
Wire, No. 14, B.W.G., miles	..	..	30
,, 12, ,,	..	..	30
Poles, telegraph, sufficient for 30 miles of telegraph.			
Telegraph, construction tools.			
Insulators, Post-office pattern, for 30 miles of wire.			
Signal stations, complete, for night and day signalling	..	..	3
Telegraph stations, complete, No.	..	..	10
Pumps, common suction, with hose	..	..	50

No. 18.

Sir,

CONSTANTINOPLE,
17*th January*, 1877.

I HAVE the honour to report the arrival of Lieutenant Hare, R.E. This officer arrived here to-day from Gibraltar.

I have the honour to be,
Sir,
Your obedient servant,

R. HOME,
Lieutenant-Colonel, R.E.

The Inspector-General of Fortifications.

PUBLIC RECORD OFFICE, LONDON

No. 10.

CONSTANTINOPLE,
Sir, *17th January* 1877.

I HAVE the honour to forward a Report on the road from Constantinople to Gallipoli.

Reports on the Enos—Adrianople—Kirk-Kilissi—Tchataldja road, and on the Scharkoi—Rodosto—Lule-Burgas—Wisa—Midia road, will be furnished in a short time.

I have the honour to be,
Sir,
Your obedient Servant,
R. HOME,
Lieut.-Colonel, R.E.

The Inspector-General of Fortifications,
War Office.

Inclosure A in No. 10.

REPORT ON ROAD FROM CONSTANTINOPE TO BULAIR AND GALLIPOLI *VIA* BUYUK-CHECKMAGEE, SILIVRI, ERREGLI, RODOSTO, KISTAMBOLI, JENIKEUI.

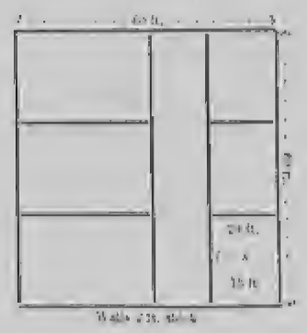
ROAD examined by Lieutenant-Colonel Home and Captain Fraser, R.E. Started 28th December 1876; reached Bulair 3rd January 1877.

Average distance travelled daily on horseback, 20 miles. Weather fine, with the exception of the 28th December.

Roads very heavy and wet; baggage carried on pack-horses; guides sometimes hired; sometimes the road was found without guides.

Neither hotels nor inns. Stabling for horses and a room to sleep in all that could be found.

Intermediate distance in miles.	Total distance in miles.	Time in hours.	Name of Place.	Remarks.
12	12	3½	Kutchuk-Checkmagee	The road from Constantinople to Kutchuk-Checkmagee is a good paved road, with the exception of a few bad spots; it follows the coast generally as far as the village of Kutchuk-Checkmagee, distant about 12 miles from Constantinople, and about a mile N.W. of the railway station of the same name, where there is a siding suitable for 50 carriages. The village consists of about 15 houses and 12 shops, and has a male population of 41. The houses are partly of stone and partly wooden. There is a large wooden house used as an inn in summer; and the house occupied by the Kaimakam contains about 12 good rooms, and is the most suitable building for staff use. It stands about 50 feet above the sea and to the N.E. of the railway station. As fever prevails in the village in summer, the situation of this house is an advantage. About 1½ miles from the village of Kutchuk-Checkmagee there is a large country house, close to the railway, well suited for head-quarters.



Intermediate distance in miles.	Total distance in miles.	Time in hours.	Name of Place.	Remarks.
				Along the railway, and about 1½ miles to the N.W. of the village, there is a stone quarry on the borders of the backwater. The channel of the backwater of Kutchuk-Checkmagee is about W. of the town. The watercourse is bridged by a Gothic arch of 36 feet span, and with good stone voussoirs, the water under the bridge being (say) 2 ft. 6 in. deep. The Constantinople—Adrianople road, a good macadamised road, crosses the bridge, and also 10 smaller arches of from 3 to 6 feet span. From the bridge the road runs for more than a mile along the low sand-bank separating the backwater and the sea; the foreshore on each side is covered with good gravel and shingle suitable for the repair of the road. Westward of the backwater, the road rises to the top of a ridge, on the crest of which there is a fountain about 100 yards N. of the road, and then falls to the bridge over the Harami stream, 5 miles from Kutchuk. This stream is that which (taking its rise at Jasorin) runs past Hademkeui and through the valley where the proposed railway is to be. The stream runs between steep clay banks, but is fordable. The bridge is of five Gothic arches, with strong voussoirs of oolitic stone about 18 inches deep. The roadway is 21 feet wide, and there are 18-inch parapet walls.*
5	17	5	.. ..	

Demolition practicable at A and B with little preparation.

				The bridge might easily be destroyed by lodging charges in the relieving arches at A and B. The crest of the eastern ridge of hills affords a favourable position for covering a retreat along the road eastwards as the ground is perfectly open; the western heights, however, somewhat dominate. At about a mile W. of the bridge is a guard-house and stabling for 40 horses, as well as a fountain and horse-troughs for 6. About 2½ miles from the bridge there is a gravel bed in the high ground alongside the road, whence stone could be got for its repair. Further on and about 1½ miles N. of the road is a large stone quarry, whence road material appears to have been obtained. About 2 miles from Buyuk-Checkmagee the road begins to descend and the bridge across the backwater and the weir of stakes can be seen. The road then descends by steep gradients to the Turkish village of Buyuk-Checkmagee, a place of 300 houses on the Sea of Marmora, and to the E. of the entrance to the backwater. Water supply good; place feverish in summer. The nine wires of telegraph which accompany the road from Constantinople here enter a telegraph station, and thence continue along the main road. A Greek village of 1,000 inhabitants and 240 houses; healthy, good water, three windmills. From the great bridge westward, the road is generally unpaved and unmade. Small stone bridge across a watercourse, which is passable by the side of the bridge almost always. Beyond this the road is roughly paved for 1½ miles.
1	18	5½	.. ..	
1½	19½	6	.. ..	
2	24	7½	Buyuk-Checkmagee.	
1	25	8	Kalkratia ..	
3	29	..	..	

* There is another one-arch bridge several miles up the same stream, on the Kutchuk-Hademkeui road.

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Intermediate distance in miles.	Total distance in miles.	Time in hours.	Name of Place.	Remarks.
1	30	7½	Ikonomico ..	Greek fishing village of from 20 to 30 houses; beach used for embarking farm produce for loading small ships. This is a favourable spot for a landing to strike the communications of a force attacking the Kalkratin-Buyuk position. The water is deep close in-shore and the country completely under fire from ships. There is a rough road inland.
5	35	11	Privatos ..	There are two small wooden bridges across water-courses between Ikonomico and Privatos. The road between these villages lies on the shore; the sand being fairly hard and level. Privatos is an important point in considering the defences of the Buyuk-Derkos lines. Privatos has about 40 houses, some large schools and colleges, and an old Roman castle; hence the road descends into a broad valley, where it is paved, and passes over a small bridge.
2	37	..	..	A fountain on the right of the road; from this the road ascends a sandy hill, and beyond this there is about a mile of good pavement before reaching Silivri into which the road descends.
4	41	13½	Silivri	A town of about 10,000, said to be composed nearly equally of Turks, Greeks, and Jews. It has the remains of mediæval fortifications, but is now quite unenclosed. The site is on the W. side of a spur which ends in a cliff at the sea, and gradually falls towards the N., where it is crossed obliquely by the road to Tchatahlja, distant 4 hours. West of Silivri the ground falls into a broad valley running inland for five or six miles, and divided by a sluggish stream about 50 feet broad at the bridge, which has 30 small arches. Parallel to the river, and to the E. of it, is a low hill N. of the road, steep at its S. end and falling gently to the N. This spur, as well as the main heights E. and W. of the river, should be held to cover a landing in the harbour, which, however is shallow and exposed. (*Vide* detailed report already supplied.) The nine telegraph wires are carried across the valley, five on posts thus Π and two each on separate single posts. The road from Silivri westward is very bad, hardly distinguishable from the plough. The road to Eregli here leaves the Silivri road at the western side of a river about 80 feet wide, which was formerly crossed by a trestle bridge, now gone. The ford is easy and shallow. The banks are steep, in general, and sandy. The Eregli road follows the left bank of the river for some distance on hard sand, and crosses a smaller stream by a three-arch stone bridge, thence it ascends a hill and passes a farm, Popas See Tchiftlik, about 20 yards on its right; on the left there is a strong wharf where charcoal and farm produce are shipped. Hence the track descends, crosses two watercourses, and, rising again, passes a large farm with a stone enclosure and a defensible keep over the entrance. There is a fountain outside the buildings, which are about 150 feet above the sea. The track is here a watercourse worn in the rock.
8	49	16½	.. ..	Popas See Tchiftlik Ekirali Tchiftlik
1	50	16½	.. ..	
1	51	16¾		
2½	53	18½	.. ..	From hence it falls to about 60 feet above the sea (being close to the cliffs all along), and, rising, passes round a promontory at about 100 feet above the sea. In many places the road is dangerously near the sea cliff.
½	53½	19	Sultan farm ..	A strong walled enclosure surrounded by about 30 small houses. The farm produce is here embarked in boats and carried to small vessels 200 or 300 yards from the shore.
½	58	19½	.. ..	The road then runs inland across a broad valley, the stream being passed by a shallow ford. The banks are sandy, and show signs of floods. From the valley the road ascends a ridge, at the foot of which there is a charcoal manufactory, whence it again descends gradually to Eregli at the sea level.

Intermediate distance in miles.	Total distance in miles.	Time in hours.	Name of Place.	Remarks.
3	61	20½	Eregli, or Erekli	This is a Greek town of about 300 houses, standing on a high peninsula, which falls to the sea level at its junction with the main land. (NOTE.—Troops moving on Gallipoli from Constantinople would not go to Eregli unless for supplies from the sea (the main road from Silivri to Rodosto being shorter and better). At the eastern entrance to the town there is a pier about 120 feet long, with a railway laid down on it. This landing-place was made for some of the rails for the Constantinople—Adrianople railway. The harbour is exposed to the N, but affords shelter from S. and S.W. The 6-fathom line crosses well within the S. promontory. The town is in the charge of a Kaimakam. Leaving Eregli, the road crosses a fordable river about 50 feet wide, with sandy banks and slow movement. From the W. bank two tracks diverge, the right or inland track is the one for Rodosto; that to the left follows the coast for five miles, and is then lost.
7½	69	23	Turkmenlu ..	Road passes the village.
3	73	24	Koja	A farm hamlet of from 15 to 20 mud huts, whence the road crosses a broad valley and stream: over the latter is a rough bridge of 54 feet span, supported by three trestles, strong enough, however, for field guns. The stream is narrow and deep, and seems liable to floods, but is fordable in summer about 200 yards below the bridge. From the bridge the road is roughly paved across the rest of the valley, and has five small culverts.
2½	77	25½	..	Road passes over a stone bridge of two Gothic arches of 18 and 20 feet span; roadway, 18 feet wide, and without parapets; the banks are steep.
2	80½	26½	..	This hamlet of from 20 to 25 houses lies on the right of the road; the road here joins the main one from Silivri to Rodosto, along which runs the telegraph with only only six wires. Stream crossed by a small, one-arched bridge.
1½	82	27	..	Ditto ditto ditto. Ditto ditto ditto. Alongside this is a fountain.
1½	83½	27½	..	The road for the last hour is exceedingly bad, deep clay, worn by the rain into watercourses. An attempt has been made to take the road round the hill and form it, but as it has never been metalled in any way, it has got cut up by the rain.
1½	85	28	..	A town of about 40,000 inhabitants, governed by a Bey. It lies at the top of a shallow bay in the fork of two ridges, the more easterly running N.W., and the other N.E. The latter forms a good defensible position against an attack from the W. (*vide* detailed report on Rodosto). The best road from Rodosto to Boulair, in winter at least, is along the coast *via* Mesolitro (*vide* Route).
2½	87½	29	Rodosto ..	The following is the route from Rodosto *via* Kistamboli.
7½	91	31	..	The W. exit from Rodosto is excellent, as far as the hill top, at which point the Malgara and Adrianople roads separate. Five telegraph wires follow the Malgara road.
1	93	32	..	The line of telegraph here diverges from the road to the left.
1½	96½	34¼	Suserat Bukur	Road steep and bad. Road to Kistamboli diverges to the left from that to Malgara, and crosses the line of telegraph which follows the latter.
½	97	35½	Kudjik ..	Road passes through this village (Turkish) in which there are, perhaps, 30 houses.
1	98	37	..	This village lies 2 miles to the right. The road now follows the right bank of a river flowing north. The country now for the first time becomes wooded and large timber grows along the banks of the streams, with which they could easily be bridged. Road crosses the stream by a log bridge.

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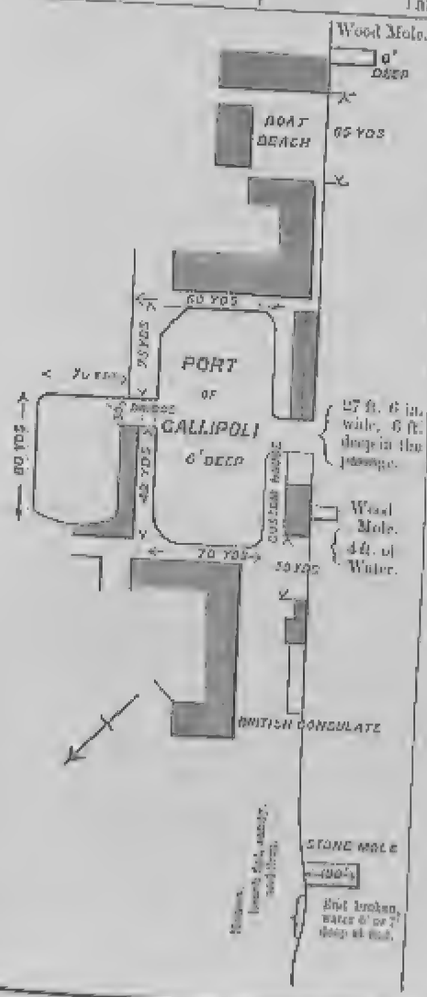
Intermediate distance in miles.	Total distance in miles.	Time in hours.	Name of Place.	Remarks.
3	101	33½	..	Road leaving the first stream, crosses a second at this line, much flooded with snow water but still just fordable.
1½	102	34	..	Road crosses a branch stream by a small, one-arched bridge.
1½	104	34½	Semitli ..	A Christian village of (say) 46 houses and with 6 windmills; it stands on a height at the intersection of several valleys. Country partly cultivated, partly wooded. From Semitli to Ganos there is a mountain road very difficult, it is said, and impassable during snow.
1½	106	35½	Injek.. ..	A Christian village of about 35 houses and 2 windmills.
6½	112½	36½	Kostamboli ..	A Christian village of about 48 houses lying in a very rugged country, generally wooded with low scrub. This region is the watershed whence the streams flow respectively N. and S. There is a mountain road (4 hours) to Merlofito *viâ* Ganos.
				On leaving Kostamboli, the route crosses a branch of the Kawak valley river.
2½	15	37½	..	Road, which keeps improving, here passes to the E. of a branch of the Kawak river.
1½	116½	38	Esandik ..	A Christian village of 6 or 8 houses.
2	118½	38½	Hahamod ..	A Christian village of about 20 houses.
2½	121	39½	Burgur ..	A Turkish village of 20 houses.
5	126	40½	..	Road rejoins the W. bank of the same stream by a ford.
3	129	42	Joljuk ..	A Christian village of 22 houses.
				A little beyond this, the road passes over some steep and broken ground, and beyond this both seas come in sight and a single telegraph wire from Scharkoui to Gallipoli converges to the road.
2	131	43	Jenikeui ..	A Christian village of about 80 houses lying to the W. of a ridge of heights extending from a point a little N. of Jenikeui to Boulair. The N. extremity of this ridge is high and almost precipitous and commands the entrance to the peninsula. The western slopes fall towards the Kawak river. The road from Jenikeui is more or less commanded along its whole length by this ridge, the S. extremity of which dies out before Boulair (*see* report on the Lines).
				From Jenikeui, a tract runs E. to join the Moriofito—Gallipoli road. The road Jenikeui—Boulair leaves the former at first in a W. direction and then turns S., accompanied by the single wire from Scharkeui.
6	137	45	..	Road passes a large four-arch bridge on the Enos road, one mile to its right.
1	138	45½	Kawak ..	A Turkish village of, perhaps, 50 houses.
				The single wire from Scharkeui here joins two wires from Rodosto.

The road after leaving Kawak is joined by that from Enos passes close to the left bank of the Kawak river, which is here about 150 feet wide, with a current of about half-a-mile an hour. The banks are of muddy sand and the stream is here fordable in summer. The depth is such that large caïques can come up to Kawak from the Gulf of Saros, and small boats as far as the four-arch bridge. This village is of considerable importance as the main roads meet here.

Intermediate distance in miles.	Total distance in miles.	Time in hours.	Name of Place.	Remarks.
2	140	46	..	Road passes a large salt factory half-a-mile to the W. This building would hold 500 men. There is a fountain by the road here.
3	143	47	..	Road crosses a small bridge over a deep watercourse.
1½	144½	47½	..	A fountain.
				Kourn Tchiftlik lies 1½ miles to the left, and between it and Boulair is an oak wood, chiefly scrub, of 700 or 800 acres.
2½	147	49½	Boulair ..	A mixed village, chiefly Christian, with about 300 houses and a male population of 880. It is returned as having 560 labourers, 150 yoke of oxen, or buffaloes, 115 arabas, and 4,000 sheep and goats.
				The soil from Kawak is sandy and the tracks consequently fairly hard in wet weather.
				(For Boulair *see* report on the Lines.)
				At this point, the road from Boulair passes through the Anglo-French lines made in 1854-5. The tract follows the saddleback and with the least wet, works into deep mud.
				Four wires of telegraph accompany the tract to Gallipoli, whence they diverge; among others, a single one, worked by Turks alone, goes into the battery at Kilid Bahr.
3	151½	51	..	From this point, the road descends a steep gradient to the sea level, and is more or less macadamised. From the bottom of the gradient, the road is roughly macadamised with paving stones, and passes over several small wooden culverts, in crossing the low plain.
3½	155	52	Gallipoli ..	The approach to Gallipoli is over undulating ground and the road descends to almost the sea level at the bay between the lighthouse and the town, in which the French had a landing-place available during south winds, and used by them for landing the sick near their field hospital which was placed here.



Gallipoli, which is the head-quarters of a Sandjak under a Pasha, is a town of 14,000 inhabitants. It is decaying owing to its loss of trade brought about by the construction of the Turkish railways.

The port, which faces to the S.W., has been allowed to silt up from 11 to 5 or 6 ft.

At 100 yards out, the water is said to be 15 ft. deep.

In general the road from Rodosto to Gallipoli *viâ* Kostamboli is passable by arabas, and therefore by guns in small numbers, but, from the very hilly nature of the country, the liability of the streams to become flooded and the softness of the surface in wet weather, the route is a very difficult one for an army. Water is to be found at the village.

There would be no difficulty in marching a small force of 8,000 to 10,000 men of all arms along this road in winter or summer, the rate of progress in winter would be about 6 miles a-day, and in summer about 12 miles.

Forage, food, and shelter for such a force could be obtained at all times.

PUBLIC RECORD OFFICE, LONDON

No. 20.

CONSTANTINOPLE,
Sir,' *3rd February* 1877.

In continuation of my letter (No. 16), 14. 1. 77, and the reports it covered, I have the honour to forward further reports on the Gallipoli, Peninsula, the Dardanelles, and the Asiatic side of that Strait.

These reports have been prepared partly to carry out the instructions furnished to me before I left London, and partly to carry out the instructions received from the Marquis of Salisbury.

Believing that it is desirable that full information as to this part of the Turkish Empire, should be in possession of H.R.H. the Commander-in-Chief, I have endeavoured to make the reports as full and detailed as possible.

I beg that you will be good enough to bring to His Royal Highness' notice the exertions of the officers who have prepared the sketches, viz., Captain Grover, R.E., Captain Anstey, R.E., and Lieutenant Hare, R.E. These sketches have been executed in heavy snow storms, with biting cold northerly wind, and nothing but great zeal and determination would have enabled them to execute the work entrusted to them in such a creditable manner.

I have the honour to be,
Sir,
Your obedient servant,

R. HOME,
Lieutenant-Colonel, R.E.

The Inspector-General of Fortifications,
Horse Guards, War Office.

Enclosure 1 in No. 20.

MEMORANDUM ON THE DARDANELLES.

There is perhaps no portion of the Turkish Empire, the future of which is so important to Great Britain as the Dardanelles. If these Straits be held by England, or a power friendly to England, the Bosphorus is of comparatively small importance.

In peace the great corn trade of the Danube must find an exit through the Bosphorous, and English merchant ships may trade in the Black Sea as they ever have done.

During war, although the entrance into the Black Sea may be denied to British ships of war, yet all exit from that sea may be denied to Russian ships by the Power holding the Dardanelles.

Master of the Dardanelles either directly by actual occupation, or, indirectly, by the action of a friendly Power, Great Britain, so long as she maintains her naval sumpremacy, may command the Sea of Marmora, and Constantinople will be under the fire of her ships, as from its situation it must be always exposed to a naval attack from the Sea of Marmora.

Master of the Bosphorous, but denied the use of the Dardanelles, the Russian Navy would really be in much the same situation that it now is.

There is, I believe, however, one case, in which the possession of the Bosphorous, militarily speaking, would give Russia considerable advantage, even should the passage of the Dardanelles be denied to her. I allude to the case when having occupied Constantinople, either directly, or by a subordinate and subservient Power, she should seize, as she undoubtedly would do, on Turkish Armenia. If, indeed, the latter event were not antecedent to the former.

Holding Armenia and the Kurdish mountains Russia could threaten the head of the Persian Gulf *via* the valleys of the Euphrates and Tigris. The best means of meeting such an attack, viz., by aiming a blow at Tiflis and the valley of the Kura River, so as to sever the Russian communications at the

most vulnerable point would (were Russia in possession of the Bosphorous) be denied to England. This, perhaps, is the only military advantage Russia would gain were she seated on the Bosphorous, the Dardanelles being denied to her.

Morally and politically her gains would be very great, but it is desirable to deal here with the military question only.

The peculiar topographical nature of the Dardanelles and the Gallipoli Peninsula seem to invite their occupation by a Power strong at sea, disposing of a powerful navy and a small army.

It is quite true that, as time went on, Russia could turn the Dardanelles, as it were, by using Salonica on the Ægean Sea, or Avlona on the Adriatic, now no longer guarded by Corfu. But many years must elapse before this could be done, the occupation of Salonica as a military post would place the Russian fleet under the surveillance of England at the Dardanelles. And the occupation of Avlona on the Adriatic would bring her into collision with both Italy and Austria. These contingencies are merely alluded to here as forming a portion of the general question.

In the reports that accompanied my letter, No. 16, 14. 1. 77, the question of an occupation of the Peninsula of Gallipoli, in conjunction with the Turks as allies, was considered at some length.

And the question of a possible occupation, not only of this Peninsula, but of a certain portion of territory on the Asiatic side, as a guarantee for the protection of British interests was slightly touched on, and dealt with at greater length in a confidential paper submitted to the Marquis of Salisbury, a copy of which was forwarded to the Inspector-General of Fortifications on the 12. 1. 77.

The accompanying plans and reports are intended to give still further information on the subject. Whether as allies of the Turks, or as a Power seeking for, and determined to have compensation in the Levant and Eastern Mediterranean for territorial changes that may take place in European Turkey —changes which, however much Great Britain may dislike, she may be unwilling or unable to prevent. In either case the state of the Dardanelles defence is of importance.

Captain Ardagh's report on the Dardanelles, which, with the illustrative sketches, I submit, gives a clear and distinct description of these Straits and their defences. It should, however, be read in conjunction with the Admiralty Chart, No. 2429 (the most modern chart of that number).

In some of the opinions expressed by Captain Ardagh I am unable to concur.

I am unable to call the masonry in the defensive works either good or well-built. At Kum-Kaleh the walls were originally built of friable sandstone, cemented with bad mortar; the former has greatly decayed, and the latter has been washed out. In many places the *mur de masque* is now nothing but an inferior dry rubble wall. The main walls are cracked in every direction, and considerable portions have fallen down. The guns, both the stone-shot guns in the demi-casemates or arches, and in the battery in front are entirely without protection. The former look through embrasures, the full size of the arches, and the latter have no parapet or protection of any kind whatever.

The same state of things, though not quite so bad, exists at Seddil Bahr, on the European side of the Strait. A few shells would render either work untenable, if, indeed, the fire of their own obsolete artillery did not effect their ruin without assistance from the attacker, as works of defence both are at present useless.

As regards the forts defending the Narrows the masonry is decidedly better, it has been occasionally pointed, but it is still very poor; the mortar is bad, and there are no bond stones. Although the main walls of the towers or keeps of the Khilid Bahr and Chanak Kaleh-si might resist for a time field-artillery, yet the castellated parapets and weak merlons would be quickly destroyed, even by 9-pounders, and their fire consequently subdued.

These masonry towers, keeps, and masonry batteries, must be classed with the stone shot guns that arm them—curious, as antiquities; useless, as fortifications or weapons.

The real defences of the Dardanelles undoubtedly consist of four batteries only. These batteries are—

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No. 3. The Southern or Mamazich portion of the Khilid Bahr work, mounting on its southern face two 26-centimetre guns, and four 21-centimetre guns, Krupp pattern; on its northern face one 21-centimetre gun, same pattern, with some smaller and less important guns.

No. 4. The Derma Burnu Battery, mounting at present one 24-centimetre gun, and one 21-centimetre gun, with an emplacement for another gun of the same type.

The above are on the European side.

On the Asiatic side.

No. 8. The Medjidich Kaleh-si.

This is certainly the best built and most formidable work on the Dardanelles.

This battery mounts at present, or may have mounted on it, five 15-centimetre guns, of Krupp pattern; one 28-centimetre gun; two 26-centimetre guns; one 24-centimetre gun; and two 21-centimetre guns, all of Krupp manufacture.

No. 10. The modern battery Nagara Point, which has mounted, or which may have mounted in a short time, two 24-centimetre and seven 21-centimetre Krupp guns.

The Turks appear to consider these four works as the most important, as in them the whole of the guns of modern type are mounted, or emplacements for such guns prepared.

Assuming, what I think is a fair assumption, that these four batteries are fully armed, the defences of the Dardanelles at present, or in a few weeks would consist of—

	28-c. (11·2-in.)	26-c. (10·4-in.)	24-c. (9·6-in.)	21-c. (8·4-in.)	15-c. (5·9-in.)
Khilid Bahr	..	2	0	5	..
Derma Burnu	..	..	1	2	..
Medjidich	1	2	1	2	5
Nagara Point	..	..	2	7	..
Total	1	4	4	16	5

Assuming that the whole of these guns are mounted, in good order, have their breech-pieces with them, and their small stores complete, 30 guns (of which nine only can be termed armour-piercing weapons) is but a weak armament for batteries defending a channel of such importance as the Dardanelles.

Can a fleet of iron-clad vessels force the passage of the Dardanelles, if the Turkish fleet do not aid in its defence?

I am of opinion that modern iron-clads could not only run the gauntlet through the batteries, but could deal with them so effectually as to open the channel to the unarmoured vessels composing a portion of the fleet.

The distance that is, more or less, swept by the fire of the guns of the four batteries already alluded to is about 12,000 yards, a space which would be passed over by an iron-clad at full speed in about 40 minutes, allowance being made for the current, taking into account the rapidly changing range, the simplicity of the navigation, and the very small number of guns (nine) that could really damage an iron-clad, it would not be surprising if such a vessel passed perfectly unharmed.

The peculiar advantages that some rivers and harbours possess, viz., short reaches, and tortuous channels, compelling ships to move slowly, are entirely wanting in the Dardanelles, there being nothing to prevent ships coming up at full speed at all times.

Under such circumstances defences of a different nature and far greater power than those existing at present should be provided.

I am unable to concur with Captain Ardagh, that this type of battery is a good one for the site occupied. Were the batteries not *à fleur d'eau*, were they subsidiary defences to others where the guns were protected with iron shields; or were they properly traversed they would possess greater value.

But the best of these works, the Medjedich Battery, is so badly traced that from the deck of a steamer the guns on one face can be completely seen through the wide gaping embrasures on the other. Such works, in my opinion, would soon be untenable, if fired into by the formidable shrapnel of the 18- or 38-ton guns.

The fact that an English fleet forced the passage of the Dardanelles on two occasions, after a long and careful preparation on the part of the Turks, with a loss in each case of less than 100 killed and wounded, at a time when the vessels were sailing ships, and when relatively to the means of attack those of defence were far stronger than at present, appears to me to prove conclusively that a properly equipped and handled fleet, or even a single iron-clad would have little to dread from running the passage. Perhaps the best defence for the Dardanelles would be small powerful rams combined with improved works, and floating torpedoes. But so long as the Turkish fleet is superior to its possible enemy, and Turkey, consequently, has a naval supremacy at sea, the defence of the Dardanelles must lie with the fleet rather than with the shore batteries. There are circumstances, such as the presence of a Turkish fleet in the Dardanelles, combined with improved works, which might render it advisable not to risk a fleet in the Dardanelles, at the same time, that it might be requisite to occupy the Peninsula of Gallipoli, and admit the fleet into the Sea of Marmora. This can be done by landing a small force on the European and Asiatic shores, and marching it in rear of the batteries and so taking them in reverse, there being nothing at present to prevent such an operation.

There are two landing places on the European shore available for this purpose; one to the north of Boulair, the other, immediately to the westward of Khilid Bahr, near the Kapo Burnu.

I submit a sketch and report on the former, prepared by Captain Anstey, R.E. This sketch is in continuation of the sketches of the ground in this neighbourhood that accompanied my report, No. 16. This landing-place is pronounced by the naval authorities to be very good, and there is said to be excellent anchorage for a large fleet in the Gulf of Xeros. A force landed here could seize the Boulair lines, and, at the same time, march on Maitos, taking the Khilid Bahr and the Derma Burnu works in rear. Marked A.

I also submit a plan and report proposed by Captain Grover, R.E., on the landing-place, near the Kapa Burnu, to the westward of the forts, and only some six miles distant in a straight line. This landing-place possesses many advantages; there are two good lines of advance by which artillery could be brought up, and several intermediate lines by which infantry could advance, connecting the main columns. Marked B.

Captain Grover's sketch shows the ground very clearly, and his report describes how the force disembarked may advance easily on the points from which the batteries may be taken in reverse. The forces opposed to be landed is a division, as laid down in the Regulations, but it would be advisable to land only one squadron of Cavalry at first, and to strengthen the Division with a mountain battery, or a battery of Gatling guns, and to add a second company of Engineers.

A force landed as proposed would be able, in the present state of the works of defence to render them untenable in 48 hours after landing.

On the Asiatic side there are several landing-places which might be used.

1. There is a good landing-place near Narly, in the Gulf of Edremid. This landing-place having been very favourably spoken of by naval men.

I had it examined by Captain Anstey, R.E. His report completely forbids its use. The country is very difficult, the road very bad, and the distance too great to render such an operation as that contemplated a feasible one. Marked C.

2. There is a fair landing in fine weather in Besika Bay, but the distance to be marched is considerable, and the Menander River

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has to be crossed, and an advance made across the great alluvial plain of Troy.

The distance and the difficulties of advance appear to render it unadvisable to adopt this plan, although, unlike the former, it is a feasible operation.

3. A landing may be effected within the Dardanelles, near the mouth of the Menander, to which the Koom-Kale fort could offer no resistance. Troops landed here would be 16 miles from Chanak. The ground is favourable, the country is rich, and there are no difficulties in the way. A sketch of this landing-place, and a report on it, and the road leading on Chanak (by Lieutenant Hare, R.E.) is appended. The village of Eren Kui, an important point, seized the day of landing would render further operations simple.

Marked D.

It will be observed that the width of the Dardanelles here is considerable, and would enable a powerful fleet to cover the landing from any hostile ships that might be assembled to dispute the Narrows, where, from the width of the channel being so small, an inferior fleet, supported by the land works, might hold the attackers in check. The width of the Dardanelles within the Koom Kale, Seddil Bahr passage, is an important point, and in favour of a landing at this point rather than higher up, as the more numerous fleet can deploy its forces, which in a narrow channel it would not do.

4. There is another landing about 10 miles higher up in Kephrez Bay. The landing here is very good, and the distance to Chanak not more than five miles. But the narrowness of the channel here would give great advantages to a fleet inferior in numbers should it attempt to resist the landing even if that landing were supported by a stronger naval force.

To resume, the best points for disembarkation are undoubtedly those within the Dardanelles itself. The actual point to be used should be determined at the moment, by the strength of the Turkish fleet acting in the Dardanelles in support of the shore batteries.

The village of Eren Kui is of such importance and it can be seized so easily that perhaps the best method to adopt would be to land the greater portion of the Infantry and a mountain battery near Kum Kale, occupying the village of Eren Kui, and land the remainder of the force near the Quarantine station, three miles below Kephrez Bay. By so doing the objection to Kephrez Bay, viz., the narrowness of the channel at this point, would be obviated.

In the confidential Memorandum furnished to Lord Salisbury, and already alluded to, reference was made to the advantages which would accrue to Great Britain were she to occupy the Gallipoli Peninsula, from the occupation of the tract of country on the Asiatic side, extending from the Gulf of Edremid to the Sea of Marmora.

Reference was also made to the necessity, in a military point of view, of holding both sides of the Dardanelles. At the Narrows the Dardanelles turn almost at right angles. The point Nagara being that round which the water flows. There are two valleys which abut on the Straits. In one the River Rhodius runs into the Straits near Chanak, some 6,000 yards from Nagara Point. In the other a small stream runs which also joins the Straits about 6,000 yards above the same point. The valleys of these streams are wide and well marked, and they closely approach at the point D on the accompanying sketch. Standing on the point D the Dardanelles are seen on both sides, through the open valleys leading north and west. A rectangular piece of ground, the sides of which are some 6,000 to 7,000 yards, is thus formed, the topographical features of which are detached from the main mountain ridges at the other side of the valleys referred to, and which rise here to nearly 2,000 feet.

Marked E.

This ground offers positions very capable of defence. The front to be defended being only some 8,000 yards. The accompanying sketch and report by Captain Anstey, R.E., explains the nature of the ground better than description can do. Should the Gallipoli Peninsula ever be held by England it would be requisite to fortify and hold this position, so as to protect the gorges of the works erected to command the Narrows, and act as a *tete du pont* on the

Asiatic side. If this ground were held there would be no difficulty in sending men-of-war up the Dardanelles into the Sea of Marmora at all times. At no other point of the Dardanelles is the position favourable for erecting batteries to stop vessels going up. The channel quickly widens to 6,000 yards, and should an enemy having advanced through Asia Minor establish himself on the shores of the Strait above the proposed line of works, no Artillery that he could possibly put in position, would effect an iron-clad ship at the range referred to. Holding this position would give to England, were she in occupation of the Gallipoli Peninsula, full command of the navigation at all times. Holding the European side only, would not insure the passage of men-of-war into the Sea of Marmora, although it might prevent them coming out.

Constantinople, 3. 2. 77.

R. HOME, *Lieutenant-Colonel, R.E.*

Inclosure 2 in No. 20.

REPORT ON THE DEFENCES OF THE DARDANELLES.

Approaching the Dardanelles from the Archipelago, the most conspicuous features at the entrance are:—On the northern or European shore, the cliffs and lighthouse of Cape Hellas; and, on the southern or Asiatic side, the high land and windmills of Cape Yenishehr (the ancient Sigæum), the north-west point of the Troad. From these capes the ground falls, and the entrance narrows to the neck between Seddul-Bahr and Kum-Kaleh, ancient forts commanding the first narrow part of the channel, which is here 4,000 yards wide.

Dardanelles.

The Dardanelles extend from here to Gallipoli (30 sea miles), and, beyond that town, the channel gradually widens out into the Sea of Marmora, and is designated Gallipoli Strait. The Dardanelles average 4,000 yards in width, the maximum being 8,000 at 3 miles inside the entrance, and the least 1,300 yards between Kilid Bahr and Chanak. The ground on either side rises in more or less steep slopes, of a bare aspect, to the summits of irregular adjacent hills, from 600 to 800 feet high. On the Gallipoli Peninsula there are two points above 1,000 feet; and, on the south side, there are mountains ranging from 2,000 to 3,000 feet, about 10 miles from the Straits. The cliffs terminating the slopes are, as a rule, low, and the coast line is much broken by spurs and valleys.

Limits.

Breadth.

Coast Line.

The mid-channel is from 30 to 50 fathoms deep, and, almost throughout, there is deep water close in shore, the few shallow points being easy to recognise and avoid. There are no shoals in the mid-channel. Navigation is consequently easy, even at night.

Depth and Navigation.

A current, of ½ to 2¾ knots per hour, sets constantly from the Sea of Marmora into the Archipelago. This, formerly, when combined with a head wind, which is prevalent, rendered the inward passage a tedious operation for sailing vessels; but a system of steam-tugs is now in operation, and, for steamers, there is no difficulty.

Current.

The defences of the Dardanelles consist of two groups—viz., (1) Seddul Bahr and Kum Kaleh, at the entrance, and (2) a number of batteries on the narrowest and most tortuous part of the channel, between Chanak and Nagara. A detailed description of these batteries will now be given. The positions of the respective works are shown on Admiralty Chart No. 2,429—"The Dardanelles."

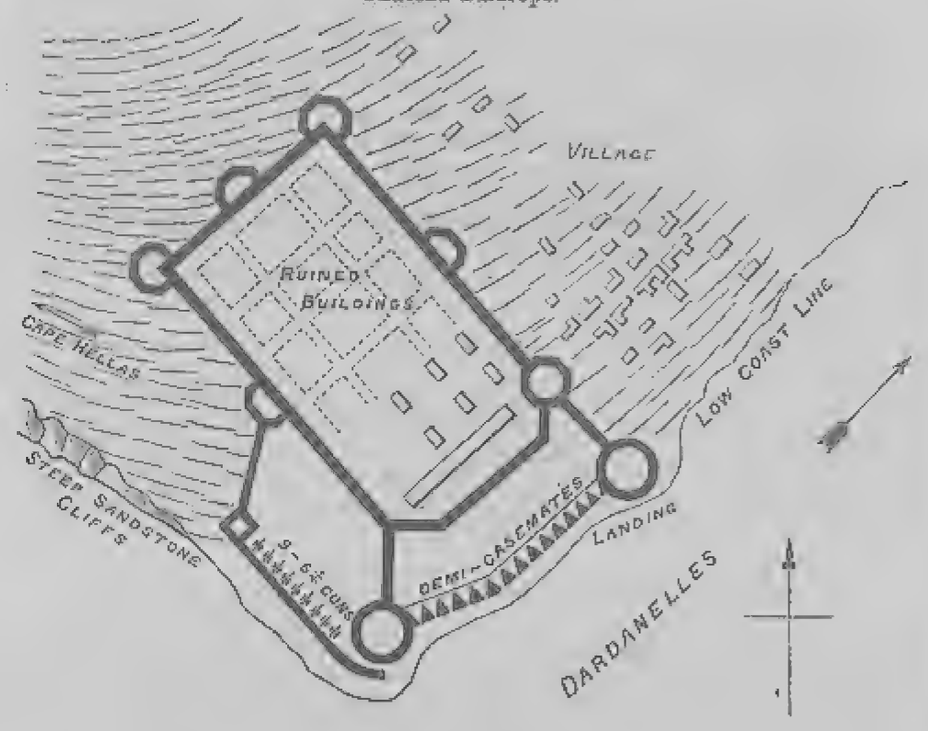
Defences.

WITHDRAWN FROM THE PUBLIC RECORD OFFICE, LONDON. 30 APR 24 38 ALL WITHOUT PERMISSION OF THE

1. Seddul-Bahr (*Barrier of the Sea*).

Château d'Europe.

Seddul Bahr or Chateau d'Europe.

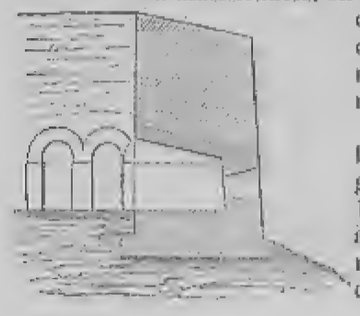


Rough Sketch, to scale 1/2,500. *See* also Water Colour sketch.

Seddul Bahr (the Barrier of the Sea), is the fort on the north side of the entrance of the Dardanelles. It was probably built, not so much to debar an entrance, as to prevent vessels from making use of the lower part of the Straits as an anchorage, the distance across (4,000 yards) being, in the smooth-bore period, too great to allow of its being an efficient barrier.

The fort, as it may be called, consists of a rectangular enceinte, built on the slope of a hill immediately to the east of the point where the cliffs of Cape Hellas terminate. The walls of the enceinte, which is about 150 yards by 100 yards, are of solid squared masonry, 20 feet to 30 feet high, and 8 feet to 10 feet thick, with a *chemin des rondes* and a parapet on top, and flanking octagonal towers at the angles, and demi-towers at the middle of the sides. These are all in very fair preservation, and proof against a *coup-de-main*; but nothing whatever seems to have been done to prevent decay, nor is there any armament on the land side.

Below, and outside the main enceinte, and connected with it by walls, are:—1st, on the side of the Archipelago, an open barbette battery with stone parapet, armed with 9—6¼-in. old, honeycombed, unserviceable, cast-iron, smooth-bore muzzle-loaders, on siege carriages in a decayed condition. 2nd, on the side of the Dardanelles, a kind of demi-casemated battery, or thick wall with large recesses and embrasures in front, some in a ruinous condition.

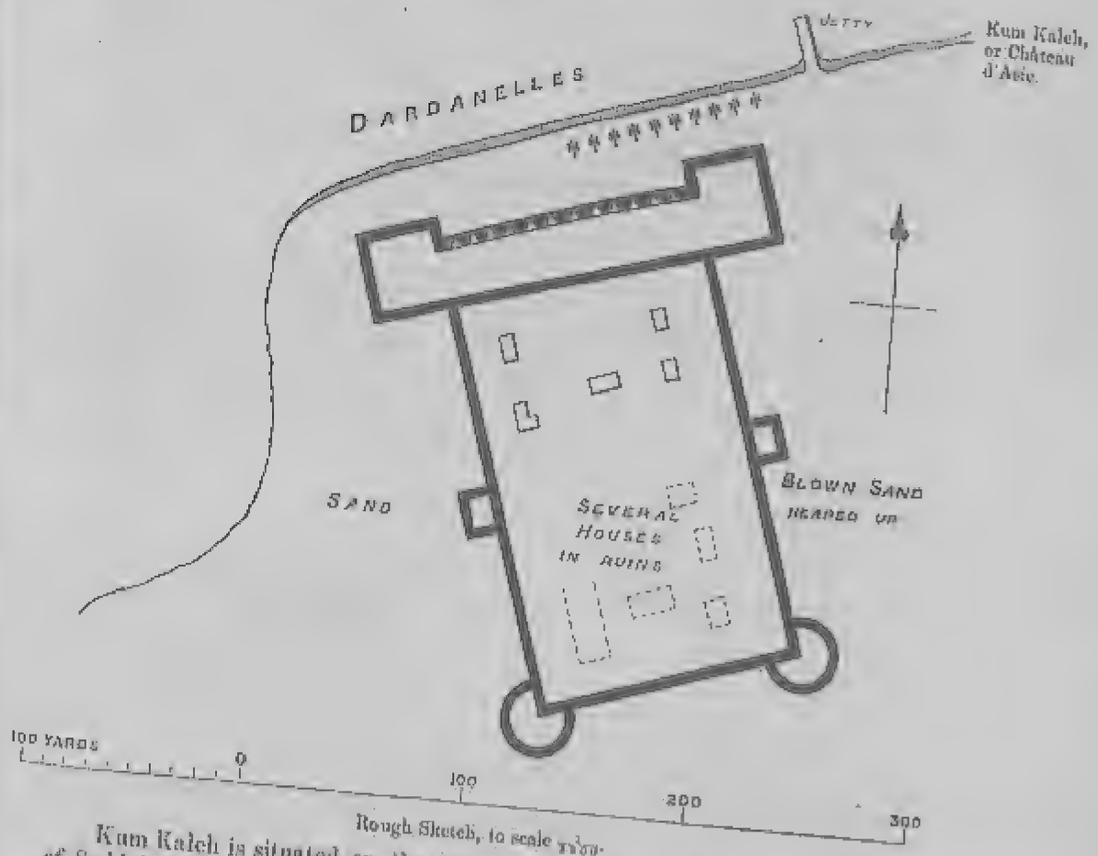


In some of these casemates there were formerly a number of *kemerliks*, or bronze guns for firing stone shot. All but one of 10-in. calibre have already been removed, but a large supply of 10-in. and 13-in. stone shot remain. The existing armament of these demi-casemates consists of 12—8¾-in. cast-iron, smooth-bore, muzzle-loading shell guns, on siege carriages in fair preservation. For these, there is an ample supply of shell, and powder sufficient for 12 rounds. This battery formerly mounted 63 guns; only 12 are now serviceable. Nothing has been done, or is proposed to be done, for its improvement.

On a hill about 600 yards north, is a small fort, dismantled and in a dilapidated condition. The site, however, is well chosen for protecting the battery against land attack. On a cliff, 2,500 yards east of Seddul-Bahr, is a dismantled and unarmed work, called de Tott's battery.

2. Kum-Kaleh (*Sandy Fort*).

Château d'Asie.



Rough Sketch, to scale 1/2,500.

Kum Kaleh is situated on the Asiatic side, opposite, and nearly due south of Seddul Bahr, and 4,000 yards distant from it, at the extremity of a sand-spit which stretches north from Cape Yenishehr, and separates the Tenedos Channel from the valley of the Mendere (ancient Scamander and Simois).

The fort is of the same type as Seddul Bahr, consisting of a rectangular enceinte, about 200 yards by 150 yards, formed by a well-built masonry wall, 10 feet thick and 30 feet high, with a *chemin des rondes* and stone parapet on top, and numerous demi-casemates with embrasures. The wall is flanked by square and round towers, and, on the Dardanelles side there is an outer demi-casemated wall, forming the principal battery.

There were formerly 64 guns at Kum Kaleh. The existing armament consists of:— Armament.

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Fifteen Kemerliks or bronze stone shot guns, 14 in. diameter and 20 ft. long, on antique and unserviceable trucks, furnished with an immense supply of marble shot. These occupy the front demi-casemates.

Ten 6¼-in. guns on siege pattern carriages, old and dilapidated, on level space outside work near jetty (*see* Plan), and 3 in. N.W. bastion.

The amount of powder in the work is small.

The interior of the work is occupied by a few houses and some ruins. On the eastern side the blown sand has accumulated to a considerable height against the outer walls, and has even penetrated into the interior. Immediately south of the work is the village in which is a telegraph station, through which communications for the vessels lying in Besika Bay are sent.

It will be evident, from the description, that even unarmoured wooden sailing ships would run little risk of injury from these obsolete and dilapidated defences, while iron-clad ships might leave them altogether out of consideration. It does not appear desirable to remodel or rearm them, as they are too far apart for the defence of the passage, and small steamers with rams or torpedoes would more effectively debar the use of the lower Dardanelles as an anchorage or landing place.

[Seddul Bahr and Kum Kaleh were built by Mahomet IV. in 1659.]

The Chanak-Nagara section seems to have been wisely chosen for defence. Chanak is 12 sea-miles from the entrance.

Chanak-Nagara Section.

The town of Chanak (Pottery), so called from the manufacture carried on here, is the locality implied when the Dardanelles are spoken of. Opposite one another, at the narrowest part of the Straits, are the old castles of the Dardanelles; called by the Turks Boghaz Hissarler, or the castles of the Narrows, and respectively named Chanak or Sultanieh Kaleh-si and Khilid Bahr (lock of the sea). The width of the channel is here only 1,350 yards.

There is a sharp turn to the eastward at Nagara, 6,000 yards north of Chanak, and in this part of the Straits all the effective defences are concentrated. They are named as follows:—

European, or Roumelian shore.	Asiatic, or Anatolian shore.
3. Khilid Bahr and Namazieh.	7. Chanak, or Sultanieh-Kaleh-si.
4. Derma-Burnu.	8. Medjidieh Kaleh-si.
5. Chum Kaleh-si.	9. Kesseh Kaleh-si.
6. Rokali Kaleh-si.	10. Nagara Kaleh-si.

On the Anatolian side, a ridge runs parallel to the shore and about 400 yards from it, affording sites for four small redoubts intended to protect the gorges of the batteries on that side. The position, although close to the batteries, is good, but the works are out of repair.

On the Roumelian side, the very broken ground renders the defence of the batteries from land attack very difficult. An attempt is, however, being made at Khilid-Bahr with this view, by constructing a work on the hill in rear.

There is a telegraph cable between Chanak and Khilid Bahr, and in the Turkish projects of defence a floating boom or barrier was contemplated.

The ancient Abydos was situated immediately above Nagara, and Sestos on the European side nearly opposite. Near here the bridge of Xerxes was constructed; and in the same vicinity Alexander's army, under Parmenio, crossed from Europe to Asia, and Suleiman first planted the crescent in Europe in 1360. Here, too, Leander used to swim across to visit Hero; Lord Byron, in repeating the feat, started from Cape Sestos, and landed near Tekeh.

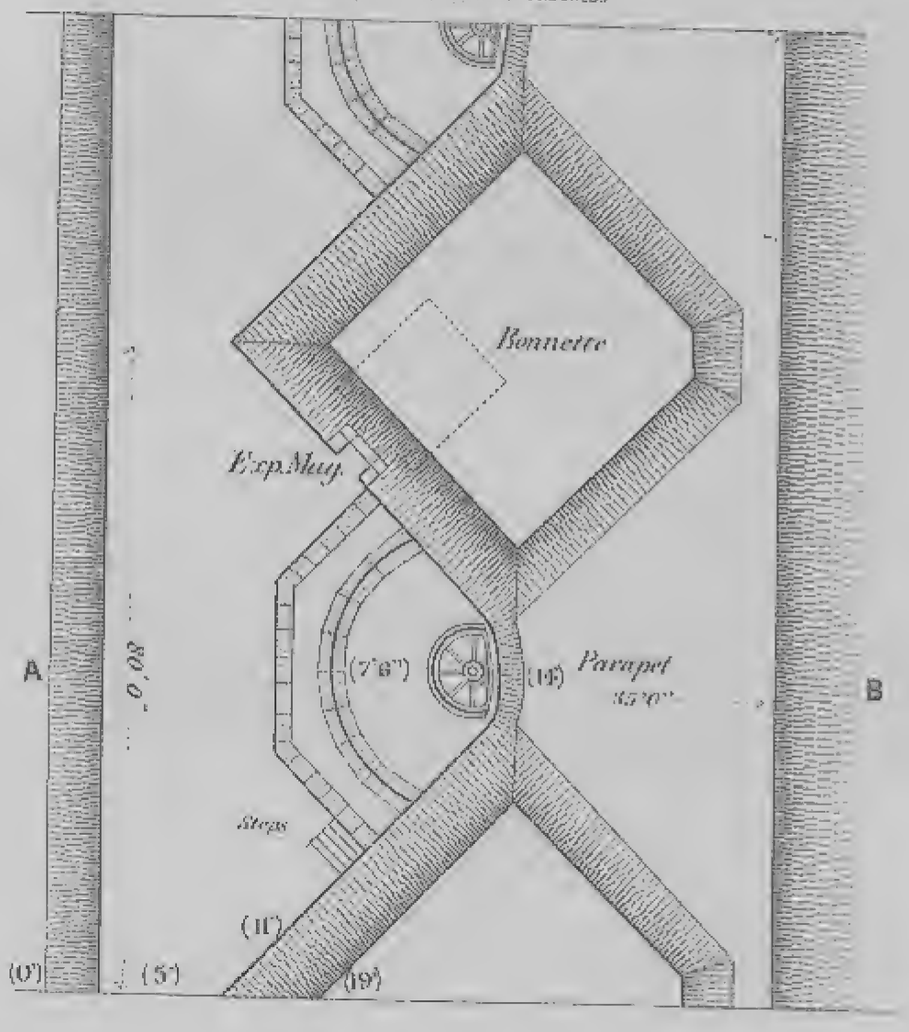
It will be convenient to describe here a few peculiarities of the ancient works.

The earliest—whether Byzantine, Genoese, or Turkish—consisted of immense castles with masonry walls of great thickness and height.

Outside these keeps followed a lower wall, with flanking towers. Both were mainly intended for defence with bows and arrows, and other means antecedent to the employment of artillery. The batteries are of a later date, and wherever it was practicable were constructed *à fleur d'eau*, partly because the water is generally deep in shore, and sufficient depression could not be given to guns at a high level; partly to obtain the benefit of ricochet, with pieces whose elevation could not be altered, and partly to get as close as possible to the ships of the enemy. The guns, in a few cases, were placed in demi-casemates

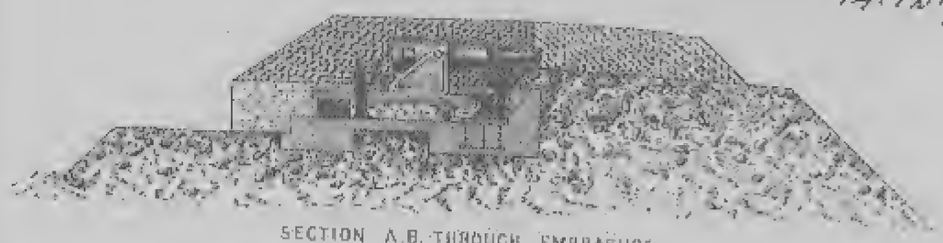
DARDANELLES.

TYPE OF BATTERIES NOW IN PROGRESS



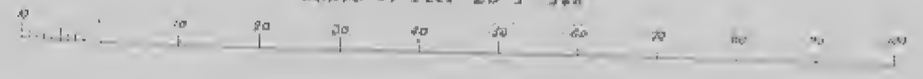
Lith. at the Intelligence Branch, of the War Department, under the direction of Lt.Col.H.Brue C.E.R.E. April 1877.

H. Clarke Captain R.E. 14.12.76.

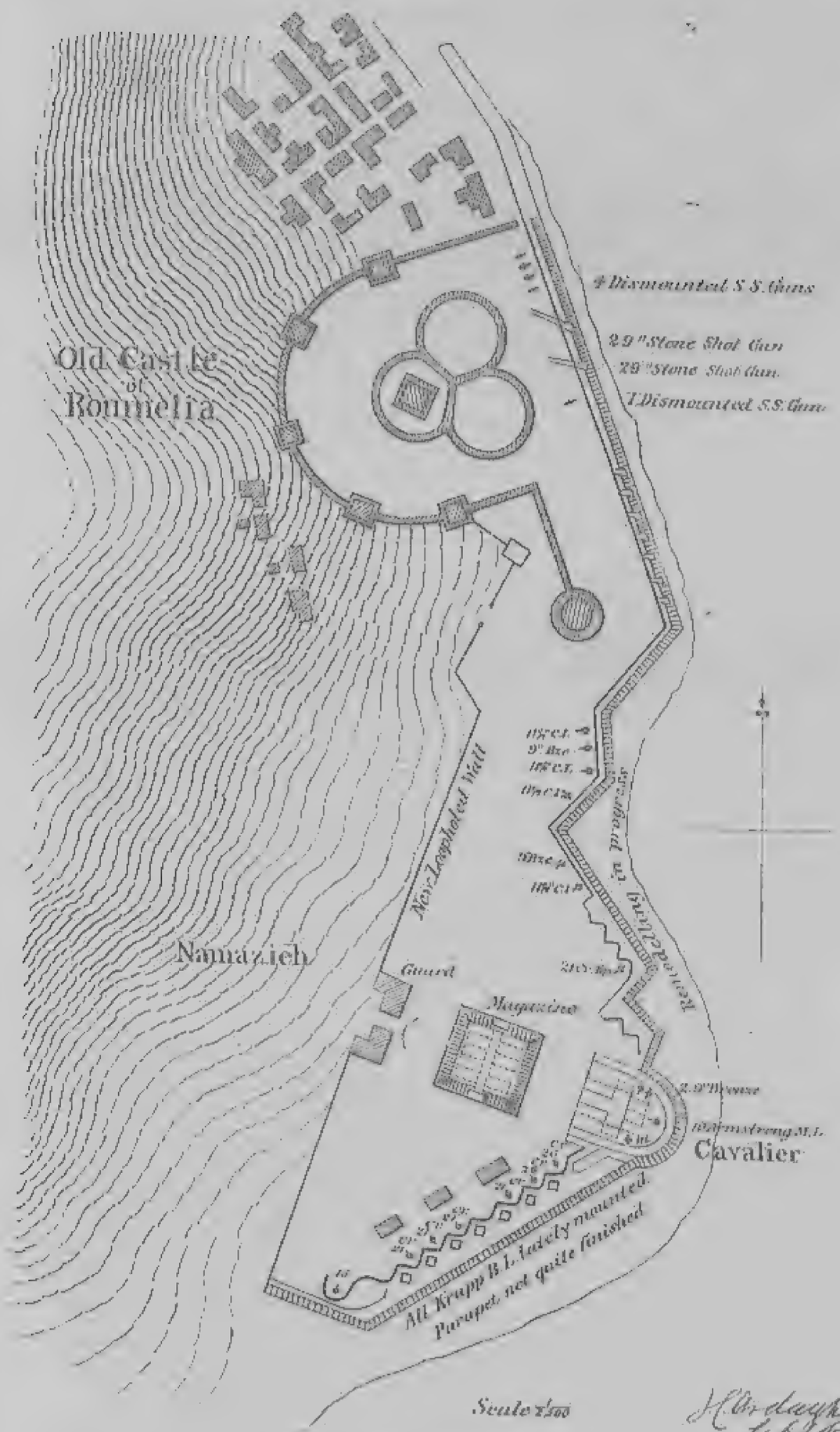


SECTION A.B. THROUGH EMBRASURE

Scale of feet 20-1" etc.



3. KHILID BAHR



Scale 1/1500

See also Water Color Sketch

H. Ardagh
Capt R.E.
12.12.76.

Lith^d at the Intelligence Branch, Q^r Mr Genl Department,
under the direction of Lt Col. R. Home, C.B. R.E.
April 1877

or recesses in a very thick wall (as described at Seddul Bahr and Kum Kaleh); but more usually in an open battery at intervals of from 14 ft. to 18 ft. The parapets were of masonry from 6 ft. to 10 ft. thick, and the embrasures of small splay. The platforms were formed of a rough sloping stone pavement.

The very ancient guns of small calibre have nearly all disappeared, the 32-pr. being now the smallest, with few exceptions.

The most remarkable pieces are the Kemerliks, or bronze guns, for throwing stone shot. These are of two calibres, viz: 29-in. and 25-in. The thickness of metal is small (5 in. to 6 in.), and nearly uniform throughout. They were founded in 1522. The shot, of which an immense supply still exists, are of marble or granite. Formerly they were fixed in the ground, but the few still in position are fixed on trucks which recoil up sloping rails extending about 30 ft. in rear. They can consequently be only fired in one direction; but nevertheless some few of them did great execution in Sir John Duckworth's squadron, which certainly made very excellent practice at them, but without much effect—one serviceable 25-in. gun at Chanak having a shot mark at the bottom of the bore, and two on the face of the muzzle.

The shot for this gun weigh 240 okes (660 lbs.), and the charge 17½ okes (848 lbs.) Proportionately the 29 in. shot should weigh 1,000 lbs., and the charge 72 lbs.

Guns of the same pattern were also made of 14 in. and 10 in. calibre (*see* Seddul Bahr and Kum Kaleh).

The great bulk of the armament consisted, however, up to the last few years, of cast-iron muzzle-loaders of 11¼-in. and 8¾-in. calibre, cast during this century at Liège, and weighing respectively 6,000 and 3,100 kilogrammes, or 6 and $3\frac{1}{10}$ tons. These are shell guns, but stone shot were also furnished for them. They are mounted on what we should class as siege carriages, consisting of a pair of very deep timber cheeks on timber wheels, 3 ft. 6 ins. diameter and 4 ins. wide on the tire. As the stone platforms slope about 1 in 10, the fire of these guns, in any position oblique to the line of slope, must be very inaccurate.

The older and smaller guns, with their carriages, are nearly all unserviceable. Quantities of chain and bar shot provided for them still remain.

With the exception of two Armstrong muzzle-loaders (8-in. and 10-in.), and a few rifled field guns of various patterns, all the armament now being mounted on the remodelled works is manufactured by Krupp, of Essen; steel, semicircular wedge breech-loaders, on wrought-iron carriages and traversing platforms, with strong serviceable front pivot-racers; firing over a sill, 7 feet high, so that gunners and platform are well protected; the emplacements from their shape forming solid traverses between gun and gun. The magazine arrangements are defective, but, on the whole, the type is exceedingly good. *Vide* Remarks II. The designs seem to have been altered several times within the last 10 years. Some points are bad, but only the newest type is spoken of above.

The most glaring defect in most of the batteries, and one now impossible to eradicate, is, that being situated at the foot of a slope, they are overlooked from the land side, and especially liable to losses from shell fired from the seaward.

The greater part of the work of remodelling the batteries is being executed by military labour, chiefly gunners, under the superintendence of officers of engineers. Where skilled labour is indispensable, civilian artisans, mostly Armenians, are employed. The execution is thus economical, but slow. The plant provided for the military labourers is very deficient, both in quantity and quality.

A sketch, showing the type of the batteries now in progress at Khilid Bahr, Medjidieh-Kaleh-si, &c., is introduced here to avoid repetition.

3. Khilid Bahr, and Namazieh.

Khilid Bahr (Lock of the Sea), the old Castle of Roumelia, consists of a central keep, formed by a very solid masonry castle in the shape of a trefoil, with lofty walls apparently 60 feet high (from the opposite side, it seems heart-shaped—*see* water colour).

Outside this is a second enceinte, likewise a masonry wall, but about 30 feet high, with flanking towers. All these are built on the slope of a hill, which rises in rear to a considerable altitude, and from whence they are commanded at short range. A work has very recently been commenced on the summit to obviate this disadvantage.

South of the main castle is a circular tower, also of great solidity, connected with the outer enceinte.

Along the shore in front of these works is a long straight line of battery, partly stone, partly earth, and without traverses. This was formerly thickly studded with guns, comprising a large number for throwing stone shot.

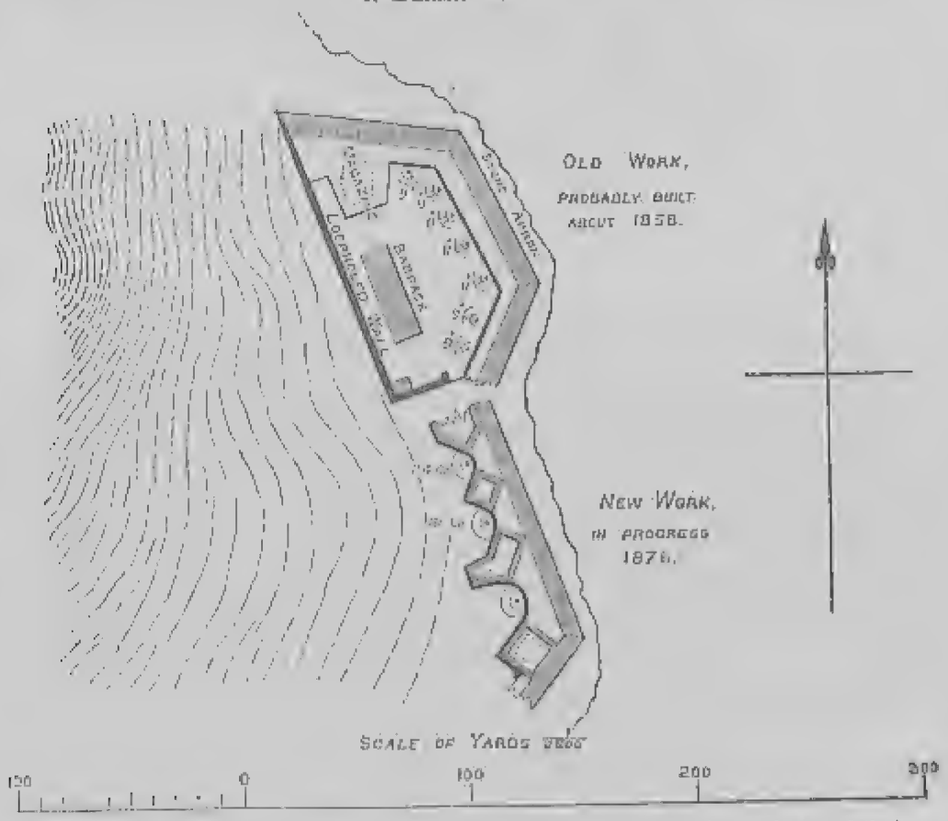
At present, there are only two stone-shot guns of 2 ft. 5 ins. mounted; five others of 24 in. calibre lie in the battery unmounted.

Beyond the detached round tower commences the modern battery, of fancifully irregular trace, and mixed armament. The older parts have 5—11¼-in. cast-iron, muzzle-loading, smooth-bores; 4 bronze do., and 1—10-in. Armstrong muzzle-loading rifled gun. In the new emplacements lately finished, are already mounted 1—15 centimetre, 5—21 centimetre, and 2—26 centimetre steel Krupp breech-loaders, making 8 in all. 18 more are to be mounted when the rest of the battery has been remodelled, the complete projected armament comprising 26. There is a horse-shoe cavalier in the middle of the battery, forming a good traverse for the northern portion. Underneath it are some magazines, and, in rear of it, a large main magazine. The rear of the battery is closed by a newly-built loopholed wall, with a small barrack or guard-house in the centre. On the shore, 300 yards south of the work, is a small dismantled battery for three guns, which it is in contemplation to re-arm.

There is a project for cutting down the height of the detached circular tower, covering the lower masonry with earth, and erecting an iron turret on it. In the present state of Turkish finance, it is extremely improbable that this will be done.

It is presumed that the front of the battery would be palisaded in time of apprehension, as its revetments—where they exist—are low. If the work commenced on the hill in rear is made sufficiently strong, it will give the necessary security against the battery being overlooked. All the recent remodelling is well and solidly executed, and in accordance with modern requirements.

4. Derma Burnu.



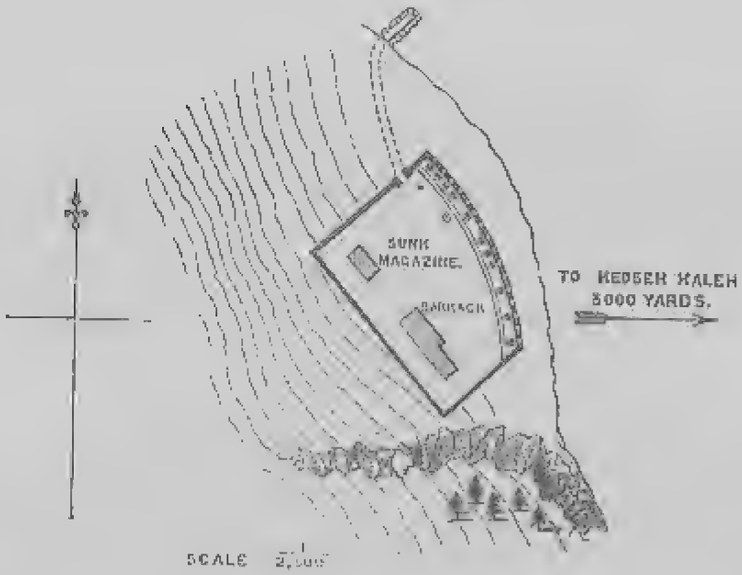
At 1,000 yards north of Khilid Bahr, on a slightly projecting point, is situated the Battery of Derma Burnu. There was probably an ancient work on the site, and this seems to have been remodelled towards the end of the

smooth-bore period. The parapets are 30 feet thick, and about 30 feet above the sea; of earth, with a stone apron at the foot of the exterior slope. The armament consists of four bronze 9-in. smooth-bores, and three cast-iron 11-in. smooth-bores; all on wooden slide carriages, mounted on wooden traversing platforms, working on pivots and iron racers. There are no traverses or expense magazines. The smooth-bore armament is to be removed, and the battery is to be remodelled to take four steel 24-centimetre Krupp breech-loaders. There is already a good magazine. In the interior is an old barrack, and the gorge is closed by a loopholed wall. The ground rises immediately in rear, and the work is quite indefensible from the land side, but will receive some support from the occupation of the hill over Khilid Bahr.

South of this relatively old battery, a new extension of parapet is now nearly completed. It contains two magazines, and emplacements for three Krupp guns, of which two—viz., 1—21-centimetre, and 1—24-centimetre, are already mounted. There is no gorge wall, as yet, to this part of the work.

The united armament, when complete, will be 6—24-centimetre guns and 1—21-centimetre gun.

5. Cham Burnu *(Fir Tree Point)*.

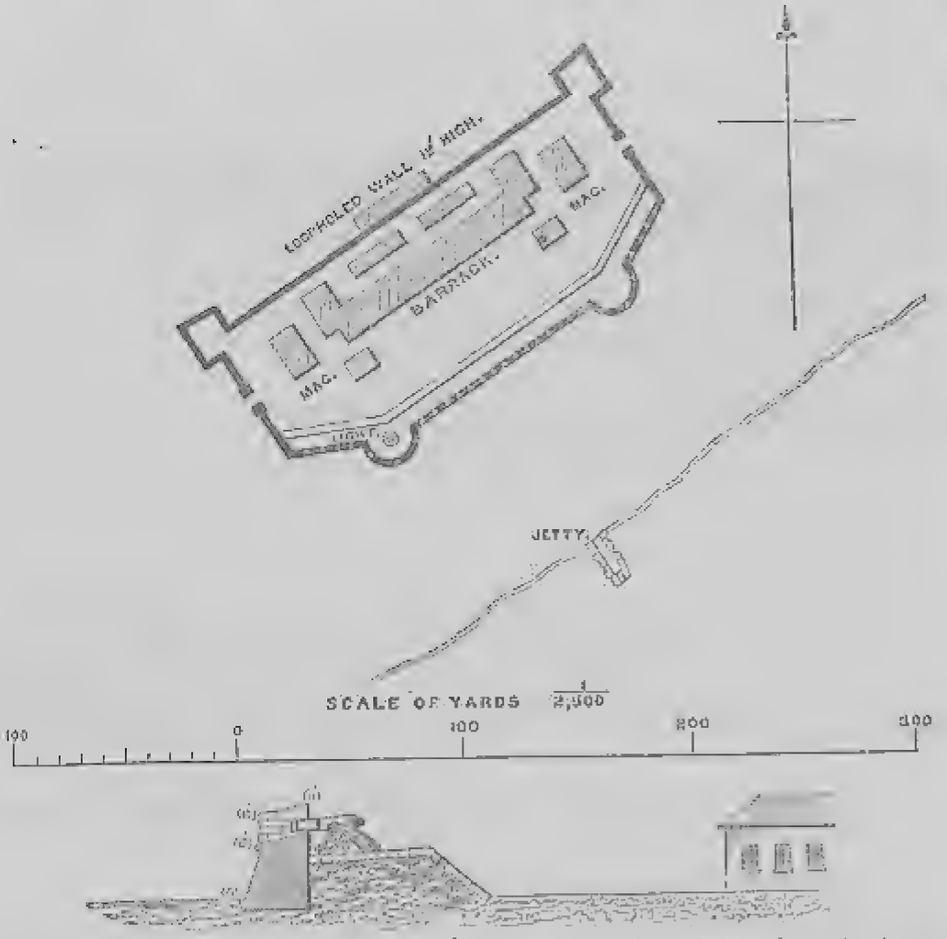


The battery at Cham Burnu is one of the mediæval type. Its parapet is of masonry, 8 ft. thick and 7 ft. high above the terreplein, which is a continuous stone platform about 12 ft. above the sea. The parapet is pierced with 16 embrasures, but there are only 11 guns at present in the battery—viz., seven cast-iron 8¾-in. smooth-bore shell guns, and four cast-iron 6-in. smooth-bore guns, all old and honeycombed. Some of the carriages on which they are mounted are in a rotten condition.

There is also one mortar.

The magazine is partly sunk, but does not appear secure. In the interior is a small barrack, and the whole is enclosed by a loopholed wall. A cliff rises immediately to the south, and it is also overlooked from the rear. The battery is situated 1,600 yards north of Derma Burnu, and is 3,000 yards from Keoseh-Kaleh on the opposite side, and above 4,000 from Chanak and Nagara. There is deep water close to shore. It is not at present intended to remodel this work, although it is desirable to have some fire in this locality to prevent vessels hugging the European shore to avoid the Medjidieh and Nagara batteries.

6. Bokali Kaleh-si.



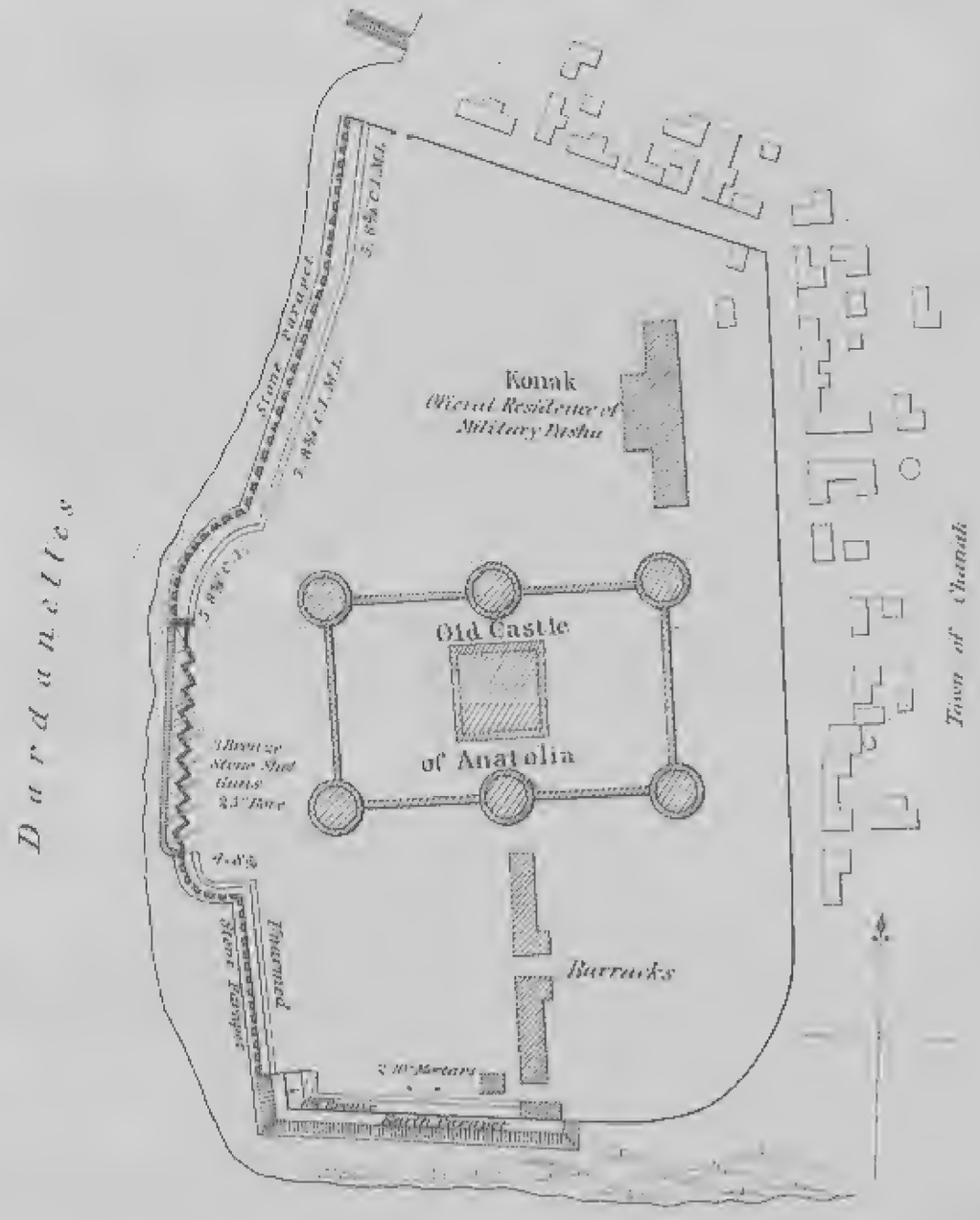
North of Cham Burnu Kaleh-si there is a long interval past the flourishing town of Maitos (ancient Madytus), and the bay of Khelia-Liman, without defences on the European side. At 5,500 yards from Cham Burnu, and 2,400 yards from Nagara, on a flat piece of ground underneath the heights which formed the site of the ancient Sestos, is situated *Bokali Kaleh-si* a battery probably built in the 18th Century. It is of symmetrical outline, and constructed of solid masonry. The front parapet, which is broken by two bastionettes, is 11 ft. high and 6 ft. thick, and is pierced with 29 embrasures. The existing armament consists, however, of only 14 cast-iron 8¾-in. smooth-bore muzzle-loading shell guns, on siege carriages, many of which are rotten and unserviceable; and one 8¾-in. brass mortar.

The remainder of the enceinte is formed by a loopholed wall with bastionettes at the angles. There are good barracks in the interior, and two magazines, both exposed to fire over the parapet. The whole work is in good repair, and is well placed to support Nagara, but is completly commanded by the hills rising in rear. It is not at present intended to remodel or re-arm it. *Bokali Kaleh-si* is the northernmost and last work of defence still maintained on the European side.

7. Chanak, or Sultanieh-Kaleh-si.

Returning to Dardanelles, the first work on the Asiatic side is Chanak-Kaleh-si (Pottery Fort), or Sultanieh Kaleh-si—called by the Franks the Old Castle of Anatolia. The Castle consists of a masonry keep of solid construction, with walls about 60 ft. high, and a platform for guns on the top. Outside this is an enceinte also formed of masonry walls, with six large circular flanking towers, all about 35 ft. high. These ancient structures are in good preservation.

7. CHANAK KALEH-SI



Hand Sketch.

N.B. See Watercolour Drawing.

Lt. Ardagh
Capt. R.E.
12 Dec.r 1876.

Along the shore, and conforming generally with its outline, is the battery, of which the parapet is of stone for about three-fourths of its length, the rest being of earth. Above 70 guns were formerly mounted on this battery, but notwithstanding that it has undergone no structural improvement, that number has been very largely reduced. The armament now comprises—three Kemerliks, or stone shot guns, of 25-in. bore, mounted on trucks recoiling on long sloping fixed rails, capable of being fired with only one fixed direction and elevation; 21 cast-iron 8¾-in. smooth-bore muzzle-loaders, 1 bronze 6½ in. ditto, ditto, and two 13-in. mortars, and three 8¾-in. mortars.

The guns are mounted on siege-carriages as in the other batteries.

There are now no rifled guns in the work, and there appears to be no immediate intention of remodelling it. For some months, however, the removal of a monster gun weighing 50 tons (which Herr Krupp presented to the Sultan Abdul Aziz, after the Paris Exhibition, and which has been standing in the centre of the Top-Haneh (Arsenal) enclosure for a long time), has been talked of, and its destination is said to be the most projecting point in the Chanak battery.

This locality, otherwise very well situated for the defence of the Straits, has the great disadvantage of being backed by the town, into which all projectiles passing over the work would fall, but even this consideration must be over-ridden by military exigencies, this being the narrowest point throughout the Straits (1,400 yards to opposite shore at Namazieh battery); the next work of defence on the Asiatic shore being 2,000 yards distant, and the width from Medjidieh to Derma Burnu being 2,500 yards. The battery ought therefore to be remodelled and re-armed.

The depth, 40 to 50 fathoms, of the intervening channel, and the strength of the current, debar the use of ground or moored torpedoes, but this current would be favourable for the use of floating or drifting torpedoes, and the widening of the Straits north of Chanak affords an anchorage in which torpedo boats and rams might lie to await the moment of action.

As regards defensibility the old castle and its keep are so strongly built that they may be considered quite proof against a *coup-de-main*, and capable of resisting field artillery for some time. The River Rhodius too, on the south side, is a bar to an advance in that direction by land. The nearest heights are over 2,000 yards distant, and, it is presumed, will be occupied.

A landing, for the purpose of attacking the works on the Asiatic side in rear, might be effected at several places between Chanak and Kum-Kaleh, at Besika Bay, about 27 miles distant, or in the Gulf of Edremid, 45 miles south.

The roads in all these directions seem bad, and if guns of medium calibre were mounted on works upon the ridge in rear of Medjidieh Kaleh-si and Nagara, from the Kodseha Tschai (River Rhodius) to the site of Abydos, it would be a serious operation to attack the Asiatic batteries in rear. The Turks, however, have as yet done nothing towards rendering these defences efficient.

8. Medjidieh Kaleh-si.

At 2,000 yards north of Chanak, a new work—Medjidieh Kaleh-si—has been in progress for the last ten years, and after several changes is now approaching completion on a plan well adapted to modern requirements, as far as an earthen battery can be made to satisfy them. The sketch plan represents as complete a few emplacements still in course of construction.

The battery is of the shape of a lunette, with a very substantial earth parapet, having a stone apron at the foot to protect it against the wash of the sea in storms. The gorge is closed by a loopholed wall, with a semicircular projection at the middle, within which is placed the main magazine, a very well-built structure, but with a covering of earth hardly thick enough. Opposite the magazine at the salient is a cavalier, with magazines underneath. The main battery is of the type already described. Commencing at the north-east angle, the existing armament of the work is as follows, the numbers referring to those figured on the plan:—

No. 1. 15-cr. Krupp B. L. R., on iron front pivot platform.
" 2. 11-in. C. I., S. B., M. L., shell-gun, on wooden front pivot platform.
" 3. 9-in. Bronze ditto ditto.
" 4. 15-cr. Bronze B. L. R., manufactured at Top-Haneh, on Prussian siege carriage.
" 5. } Not complete.
" 6. }
" 7. 15-cr. Bronze B. L. R., on Prussian siege carriage.
" 8. Not complete.

No. 9. 12-cr. Bronze B. L. R.
„ 10. 15-cr. Krupp, on iron platform.
(Here follows a high cavalier.)
„ 11. 15-cr. Krupp, on iron platform.
„ 12. 28-cr. „ „
„ 13. 24-cr. „ „
„ 14. Emplacements for 26-cr. Krupp, now occupied by two 9-in. Bronze S. B., on siege carriages.
„ 15. Emplacement for 26-cr. Krupp, now occupied by a field gun.
„ 16. 21-cr. Krupp, on iron platform.
„ 17. 21-cr. Krupp, on iron platform.

There are also in the work, dismounted: 1—8-in. Armstrong M. L. R., 7—9-in. Bronze shell-guns M. L., S. B., 15—6½-in. C. I., M. L., S. B., 1—12-cr. Bronze B. L. R., on siege carriage.

The complete armament will comprise about 16 Krupp guns, from 15 to 28-centimetres in calibre.

It is noticeable that the steel rifled guns already mounted include four different calibres, while there are no less than seven other varieties in the work, so that the confusion of ammunition is likely to be a most serious drawback.

The masonry and earthwork is all very well executed. In rear of the work a level space has been excavated in the slope of the hill, as a site for barracks for the garrison. The buildings were being piqueted out on the ground at the date of inspection (12. 12. 76).

There is a military hospital midway between Medjidieh and Chanak. The ridge which runs parallel to the shore from Medjidieh to Nagara, rises very steeply from the former work, near which it first abuts on the coast.

There are several old redoubts upon it, and but a moderate amount of labour is requisite to convert it into a good line of defence for the rear of this group of batteries.

9. Keoseh Kaleh-si.

Advancing northwards, 1,500 yards from Medjidieh-Kaleh-si, the old battery of Keoseh Kaleh-si is reached. The channel is here 3,000 yards across to Cham Kaleh-si, and Nagara battery is 2,500 yards distant.

Keoseh Kaleh-si, or Half-moon battery, is a symmetrical work built of stone, the battery having 24 embrasures on the main circle, and three in each flanking circular portion. The parapet is 8 ft. thick, 11 ft. high outside, and 7 ft. from the stone platform.

There are barracks within the work, the flanks and gorge being formed by a loopholed wall with flanking towers.

The armament is now altogether composed of old smooth-bores, and comprises 7—7-in M.L., and 9—8¾-in. M.L., on siege carriages, and 1—8-in. mortar. The masonry and buildings are in good repair, and the magazines, which are badly protected, contain nearly 100 rounds per gun.

The hill rises steeply behind, completely overlooking the work.

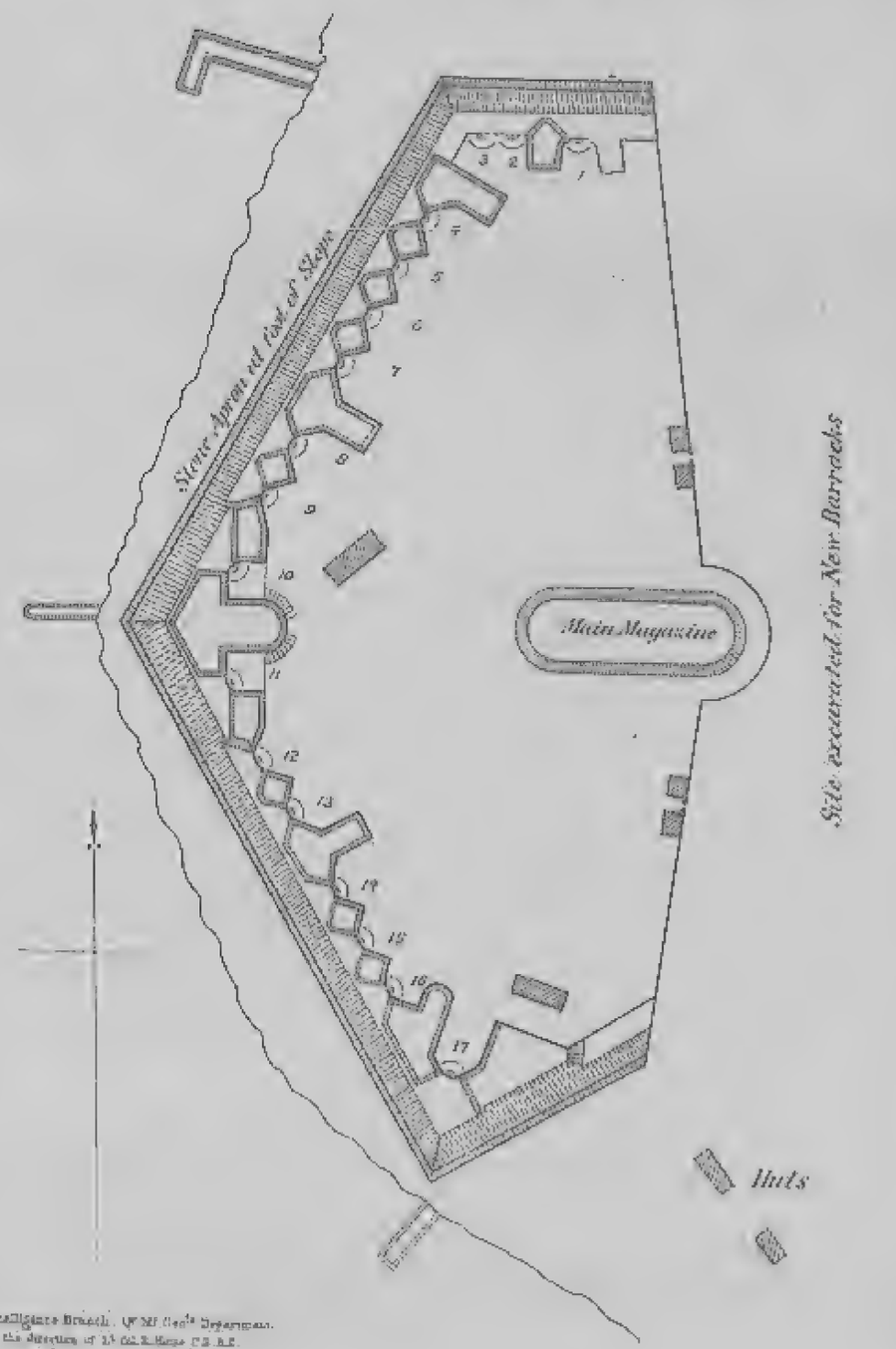
10. Nagara Kaleh-si.

Nagara Point projects conspicuously, and the channel here bends sharply to the east, and then gradually assumes a north-easterly direction for the rest of its course. The defences on the point, which is narrow and sharp, consist of an old work of masonry, and a new redoubt of earth. The old work is of singular symmetrical outline—an example of perverse ingenuity on the part of the designer. The curious geometrical trace is aptly described as resembling the pattern of a Persian carpet.

This inappropriate system, if it may be called so, is to a certain extent continued in the zig-zag parapet connecting the old work with the new, and the design of the new redoubt is very defective.

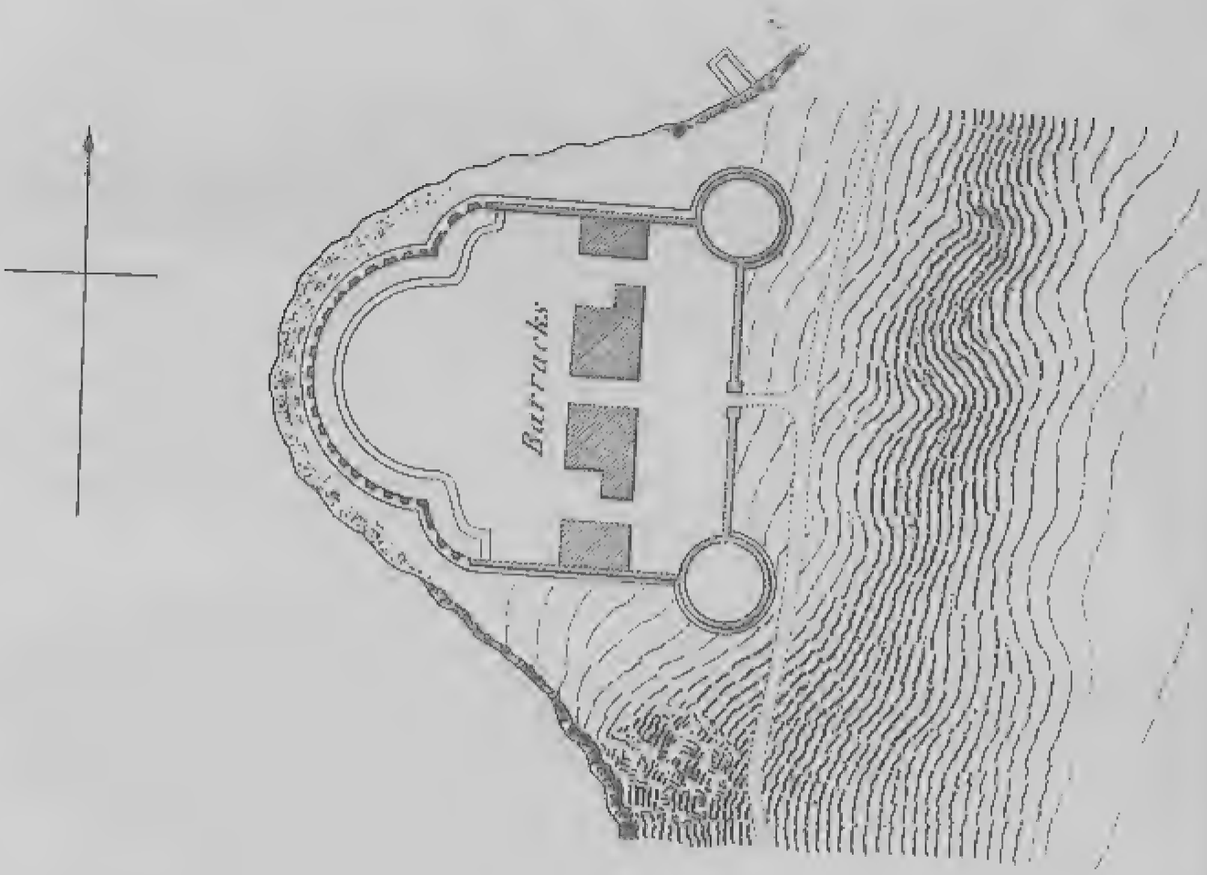
The stone parapets of the old work are 8 ft. thick, about 11 ft. high outside and 8 ft. high from the stone gun platform. The embrasures are from 15 ft. to 18 ft. apart. In the middle of the advanced part of the work stands a tower about 80 ft. square, with semicircular projections on each side. Its lower storey is vaulted and serves as a magazine. On the upper part there is a platform surrounded by a parapet 5 ft. thick and 7 ft. high, pierced for 20 guns; its walls are about 30 ft. high. Towards the land side of the work there are barracks and offices. The gorge only has a slight ditch. The whole of the work is in tolerably good preservation.

The armament now consists of 19—8¾-in. cast-iron M. L., S. B., on siege carriages, on the south side; 4 ditto, ditto in front at the salient; and

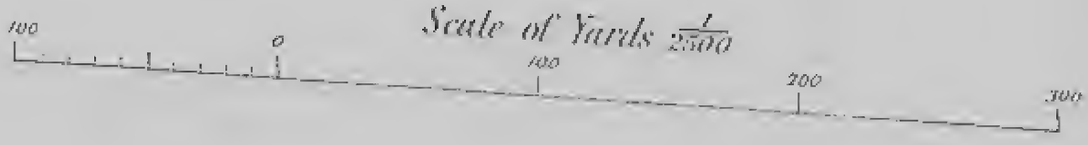


9. KEOSEH-KALEH-SI.

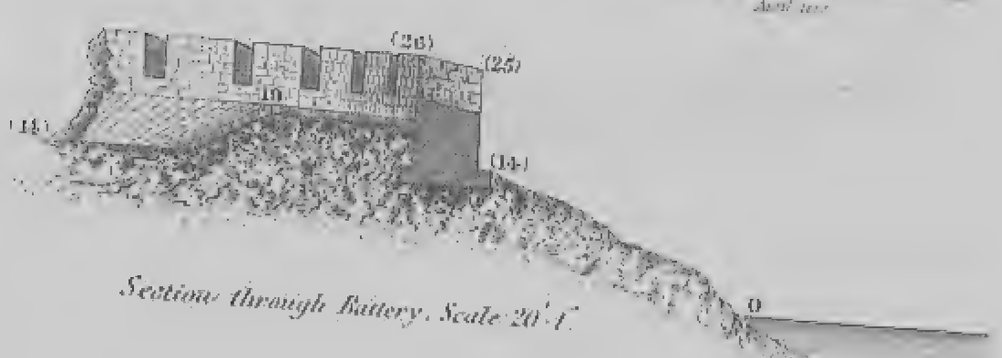
HALF MOON BATTERY.



Scale of Yards $\frac{1}{2500}$



Lith. at the Intelligence Branch, Qr Mr Genl's Department, under the direction of Lt Col. R. Home, C.B., R.E.
April 1877

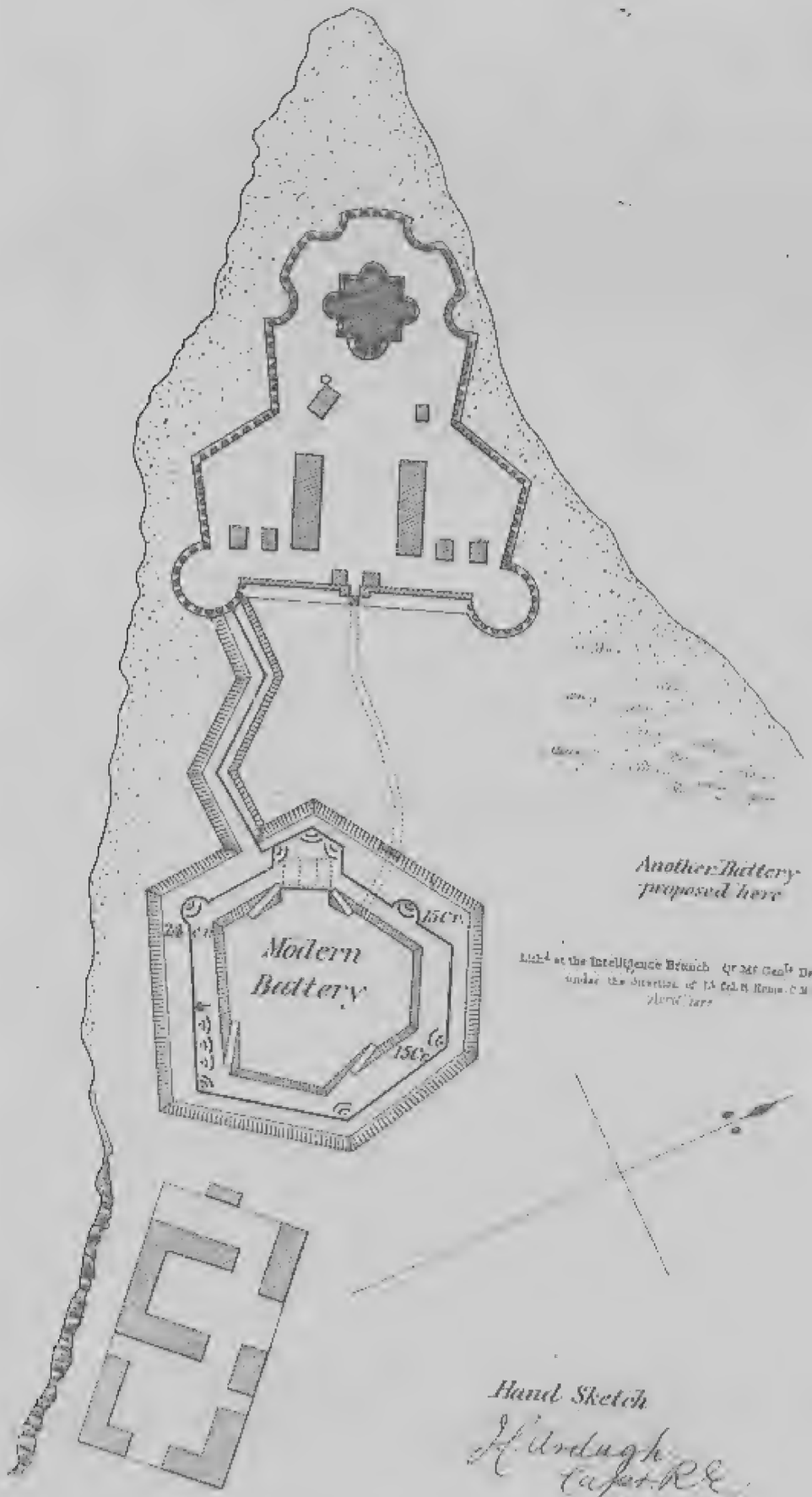


Section through Battery. Scale 20' 1".

Hand Sketches

H. Ardagh
Capt. R.E.
12 Decr 1876.

10. NAGARA KALEH-SI



Hand Sketch
Hindugh
Capt. R.E.
13.12.76.

12 ditto, ditto on north side. There are also two bronze 10-in. mortars, 6—8¾-in. guns unmounted, and 7—6¼-in. guns unmounted, on the top of the tower.

It is not now intended to remodel the lower portion, nor indeed is it capable of any satisfactory improvement at moderate cost.

Projects have been made for the formation of a mask of earth round the tower, and the adaptation of its platform for a few rifled guns. This would be a desirable and efficient amelioration.

The newer portion, consisting of the redoubt and connecting parapet, has been 25 years in process of construction, and is not yet finished, as it appears to have been several times remodelled.

The armament at present consists of 1—24-cr. Krupp B. L. R. at the S.W. angle, 1—15-cr. ditto on the N.W. face, 1—15-cr. ditto at the N.E. angle; 8 smooth-bores, chiefly 8¾-in. bronze shell-guns, about to be removed. Preparations are now being made for constructing new emplacements on the south-west face for 3—21-cr. Krupp guns; and on the connecting parapet for 1—24-cr. ditto, and 2—21-cr. ditto.

The complete rifled armament will, therefore, consist of 2—24-cr., 5—21-cr., and 2—15-cr. Krupp guns, and a few smooth-bores—quite insufficient for the importance of the position. It is stated that the rest of the armament is to remain smooth-bore.

There is an ample supply of ammunition for the obsolete armament, but it could not be ascertained whether the rifled guns were provided. At least the impression was left that the supply was extremely small. This, however, is not a matter of much importance, as the projectiles can be turned out with tolerable rapidity at the Zeitun Burnu Arsenal, near Constantinople, on which I have already reported.

The important point to notice is the comparatively small number of guns proposed to be placed at this very important point.

Landward of the work the ground is flat for 300 yards. At 500 yards it begins to rise steeply, and on the summit at the end of the ridge extending from Chanak a redoubt exists on the summit of a singular tumulus or outlying knoll, forming the left of the line covering the gorges of the works.

SUMMARY.

From the foregoing description it will be evident that the defences of the Dardanelles, although much improved of late, are not at present of such a nature as to offer any very serious opposition to the passage of a hostile fleet; nor will they be satisfactorily efficient even when the remodelling and re-arming now in progress is completed, according to the present intentions of the Ottoman Government.

Seddul Bahr and *Kum Kaleh* at the entrance may, from their obsolete character and dilapidated condition, be left out of consideration. *Chum Burnu*, *Bokali*, and *Keosch* have no rifled guns, and could be disregarded by ironclad ships.

Omitting the 15-centimetre (6-in) rifled gun as being inefficient against armour-plates, there remain the following numbers of Krupp rifled breech-loaders, from 21 to 28 centimetres calibre, to be encountered:—

	Heavy Rifled Guns.		
	Actually Mounted in Dec. 1876.	Will shortly be placed in position.	Total Finished Armament.
Kilid Bahr	7	18	25
Derna Burnu	2	5	7
Medjidieh	4	11	15
Nagara	1	6	7
Total	14	40	54

Fourteen heavy rifled guns, therefore, are now in position. In a few months forty more will have been added, making a total of fifty-four. Considering the extreme facility of navigation, and the difficulty, if not impossibility, of using fixed torpedoes, it would appear that this armament, no single gun of which is protected by iron, is quite inadequate to oppose the passage of an iron-clad fleet, unless it be supplemented by naval means, and by the extensive employment of torpedoes. Nor are the defences wanting only in guns. The recently remodelled batteries, although well constructed in many respects, and having high and thick parapets, and good magazines, are almost all situated on sites at such a slight elevation above the sea, as to render them peculiarly liable to shell fire, and to be actually looked into by Gatling guns in a ship's tops.

They are also subject to be taken by assault, or at least to be rendered untenable by an attack from the land side, unless the heights in rear of them are occupied by a considerable force, or efficient works are constructed to protect their gorges. Some such works were formerly erected on the ridge between Chanak and Nagara, but are now in a ruinous condition, and nothing is being done to improve them. A work has been commenced over Khilid Bahr, but the progress made is very slight. Nothing short of works proof against a *coup-de-main* could be considered sufficient to secure the batteries on the land side, and such works there seems to be no intention of constructing.

As the garrisons now quartered in the works have no proportion to the numbers ultimately needed, no reference is made to them. Barrack accommodation is, however, deficient, and bomb-proof cover for the garrisons is almost totally wanting. At this moment the artillerymen must be quite ignorant of heavy gun practice, having had no opportunity of learning it, but the Turks have always been apt artillerists. It was impossible to ascertain what quantity of ammunition was stored in the batteries, from the evident disinclination of the Turkish officers to give any information, but it was conjectured to be excessively small. The Turkish foundry at Zeitun Burnu was, however, busily engaged in the manufacture of projectiles for heavy guns, and the total quantity required would not be very great.

J. C. ARDAGH, *Captain R.E.*

CONSTANTINOPLE,
December 1877.

Inclosure 3 in No. 20.

NOTES ON THE LINE OF COAST SKETCHED IN THE NEIGHBOURHOOD OF THE TOWN OF BULAIR, WITH REFERENCE TO FACILITIES FOR LANDING TROOPS.

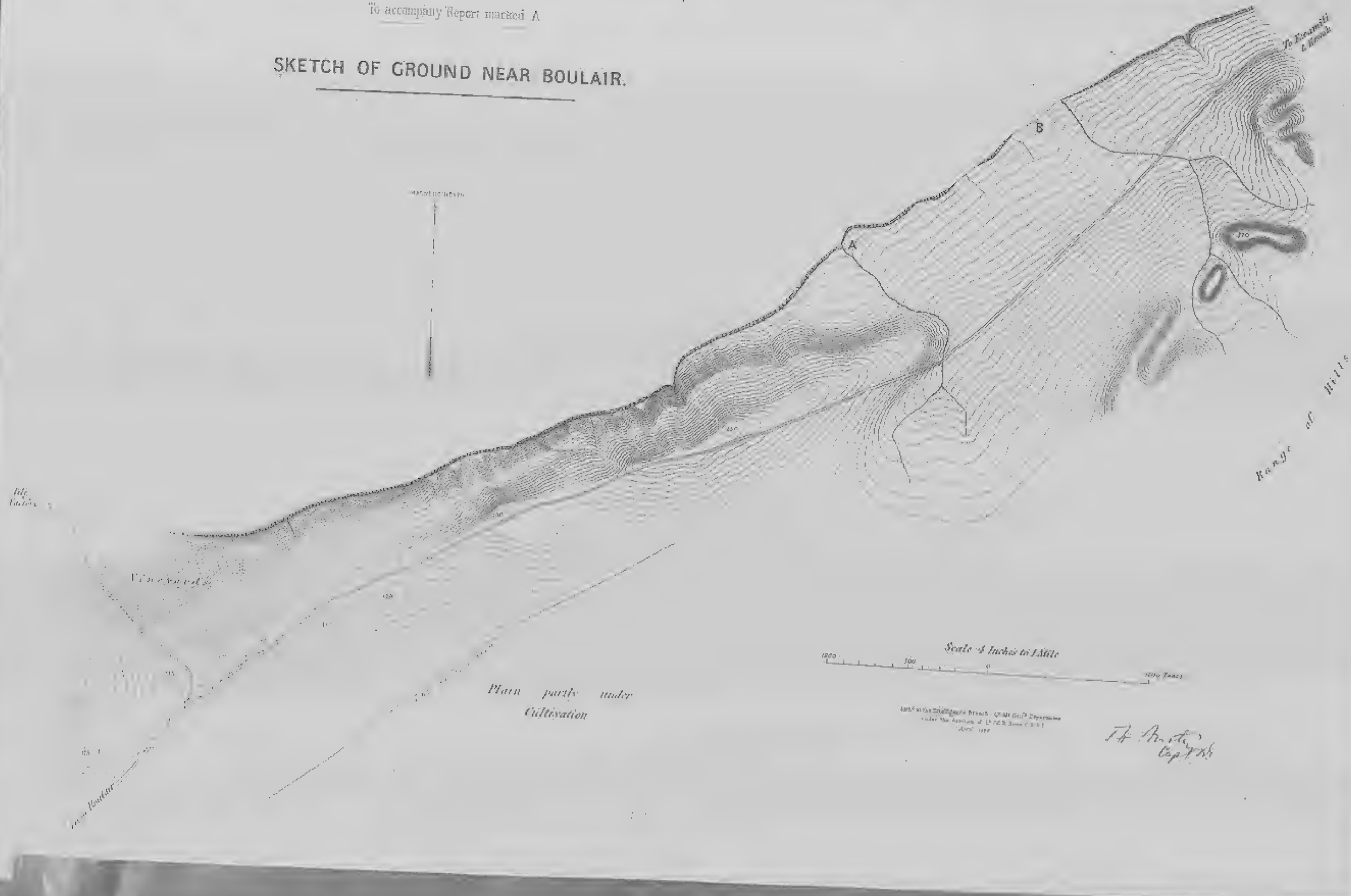
1*st February* 1877.

Troops could be landed in the neighbourhood of the "Tile Factory," to the south-west of the appended sketch; but the coast line becoming precipitous, no other spot would be available until points "A" and "B" are reached, at the former of which some 60 yards of beach could be turned to account, and, at the latter, about 500 yards. The soil, from the coast up to the road shown on the sketch, is loam mixed with sand, and beyond the softness of the ground, no obstacle intervenes to hinder the movement of any arm of the Service. The road to Bulair is, in general, on sandstone, and is in fairly good condition. About a mile beyond the limits of the sketch, the beach again becomes of a shelving character (*i.e.*, to the north-east).

T. H. ANSTEY, *Captain R.E.*

To accompany Report marked A

SKETCH OF GROUND NEAR BOULAIR.



Inclosure 4 in No. 20.

Sir, *Maïdos, Dardanelles, 31st January* 1877.

1. I have the honour to forward herewith sketch sheets,* on the scale of 4 inches to a mile, prepared, in accordance with your directions, to show the portion of the coast between Kaba Tépé and Suwla Bay, on the west side of the Gallipoli Peninsula, opposite Maïdos, which seems suitable for the landing of a force to attack, in rear, the batteries of Kilid Bahr and Boukali, as a means of land co-operation with a naval effort to force the passage of the Dardanelles.

2. The selected coast is low, and affords easy access to the interior, for an extent of nearly two miles, on the west of the village of Böjük Anafarta. It is here protected from the prevalent north-east winds, and the Admiralty Chart appears to show sufficient depth of water, and good anchorage, for the proposed operation.

March upon Kilid Bahr.

3. Six miles south of the proposed landing place are the heights of Yariar (700 feet), and Hadji Manorli Dagh (660 feet), which command the high plateau stretching eastwards from them for about three miles, and terminating in the Degirmen Burnu (640 feet), which overlooks the coast batteries of Kilid Bahr and Tscham Kaleh, at ranges of less than a mile.

4. It would consequently be of great importance for an invader to seize those heights, and the march to them should be directed along the firm sandy beach, south of the proposed landing place, to a point half a mile north of the Kaba Tépé, where the road towards Eski-Ibrahim rises gradually (150 feet), and should be followed for about a mile, so as to gain the valley of the Asmak Déré, below the heights, whose gorges, with the sandy detritus at their base, would give sufficient slopes and cover for an ascent.

5. Such a seizure of the heights, it is presumed, could hardly be disputed by any adequate detachment likely to be available from the probable garrisons of the coast batteries; and the flanks of a force advancing along the plateau towards the Kilid Bahr would be protected by the great command of that plateau, and by the steepness of the slopes which bound it.

Nature of Country.

6. The roads are little but worn araba tracks. The country is open, with very few trees, gently undulating, and mostly under cultivation for cereals. There are no enclosures, and the only obstacles to a march are the channels cut in the sandy soil by mountain streams, of which the chief—the Asmak Déré—has a channel, in some places from 8 to 10 feet deep, and from 20 to 30 feet wide. But the very soft nature of the sandy soil would permit the easy cutting of ramps, and the streams themselves are unimportant as obstacles.

7. The Kaba Tépé—Eski-Ibrahim road, after crossing the Kalk-mas Dagh (at level 380 feet), advances, through a fertile, fruit-producing valley, directly upon Maïdos, which is one mile north of the Tscham-Kaleh battery; but this road is impracticable for artillery on the south side of the Kalk-mas ridge, owing to the steepness of the gradient, the shortness of the zig-zags, and the bad condition of the road, which is here roughly paved in parts with ill-laid boulders.

March upon the Boukali Battery.

8. The Boukali Battery is protected from the north by the south-west spurs from the Kodja Tépé.

9. Consequently, to shell it in rear, a battery must be established on the lower slopes of the range falling to the west side of the stream flowing through the Boukali Valley.

* With general map, "Carte de la Presqu' Ile de Gallipoli, levée par les Officiers d'Etat-major de l'Armée d'Orient en 1854." Photozincographed at the Ordnance Survey Office, Southampton, in 1876.

10. To gain this position, guns must march from the proposed landing place (in consequence of the very impracticable and dangerous condition of the road, under the landslip, from Böjük Anafarta, between Boukali and Kodja Déré to Kilia Bay), by the circuitous route through the villages of Böjük Anafarta and Koum-Keui to Boukali, half a mile to the south of which they can cross the valley to a convenient position on the slopes east of the conical tumulus (height 395 feet), which here forms a conspicuous landmark, half a mile to the south-west of Boukali.

11. If this march be undertaken in a wintry season, it will be advisable for the guns to proceed *viâ* Silvelé and Ouzounderlé to Koum-Keui, and thence along the direct road towards Yallova, turning due west (just before entering that village) over the pass to Boukali, so as to avoid the streams, swampy meadows, and inundations, which, in mid-winter, render impassable the valley west and south of Koum-Keui.

12. The proposed road, though three miles longer than the direct summer Koum-Keui—Boukali track, is carried on comparatively high ground over the lower slopes of hills, and crosses, by substantial stone-arched bridges, the mountain streams which here abound.

13. If the Boukali valley be then crossed by the beaten track leading over the hills to Kilia Bay, a convenient position for guns will be found, on slopes of 5°, with a command of about 100 feet, at the range of 2,600 yards from the Boukali coast battery.

14. The above-named roads are all in bad condition, most of them being unpaved tracks through sandy soil, much worn by araba wheels; but, in summer time, the country would be, in most places, open and practicable for the movements of troops of all arms.

15. The lengths of marches requisite to gain the proposed positions for guns to take the coast batteries in reverse, are: for the right (or Kilid Bahr) column, 12 miles, or 6 hours; and, for the left (or Boukali) column, 13 miles, or 6½ hours.

16. Should an entire Division be disembarked for the operation, it is suggested that the 9-pr., and one 16-pr. battery, should be attached to the right column; and the second 16-pr. battery to the left column; and that, to one battalion from each Infantry Brigade should be assigned the duties of holding the coast, Anafarta base, and of maintaining the communications thence with their respective columns.

17. The advanced-guard, in each case, to consist of a wing of the divisional rifle battalion, to precede and flank the advances through the mountain passes; and, in consequence of the dilapidated state of the roads, half a company of Engineers should march (with all tool pack-horses available) at the head of each column, to level obstructions and cut ramps; whilst the Cavalry squadrons attached to the columns should, it is submitted, after scouting to the foot of the hills to be ascended, patrol southwards; on the right, holding the mouth of the Maidos valley, and, on the left, pushing down the Yallova valley, so as to guard against any attempt from Sestos against the communications of the left column.

I have the honour to be,
Sir,
Your most obedient Servant,
G. E. GROVER, *Captain R.E.*

Lieut.-Col. R. H. Home, C.B.,
Royal Engineers.

Inclosure 5 in No. 20.

REPORT ON THE ROUTE FROM DARDANELLE, OR KALEH-SULTANIE, TO NARLY, ON THE GULF OF EDREMID, *viâ* BEIRAMITSCH.

This route may be described in general terms, in few words, as being practically impassable for any army intended to act with quickness, the road being, in almost its entire length, a mere track, passable only in single file and in open weather. To render it fit for the passage of Cavalry and

FROM A FRENCH MAP OF GALLIPOLI

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Major General J. Cameron R.E. C.B. F.R.S. Director General. 1877

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SKETCH
OF
PORTION OF WEST COAST OF
THE GALLIPOLI PENINSULA
N.W. OF MAÏDOS.

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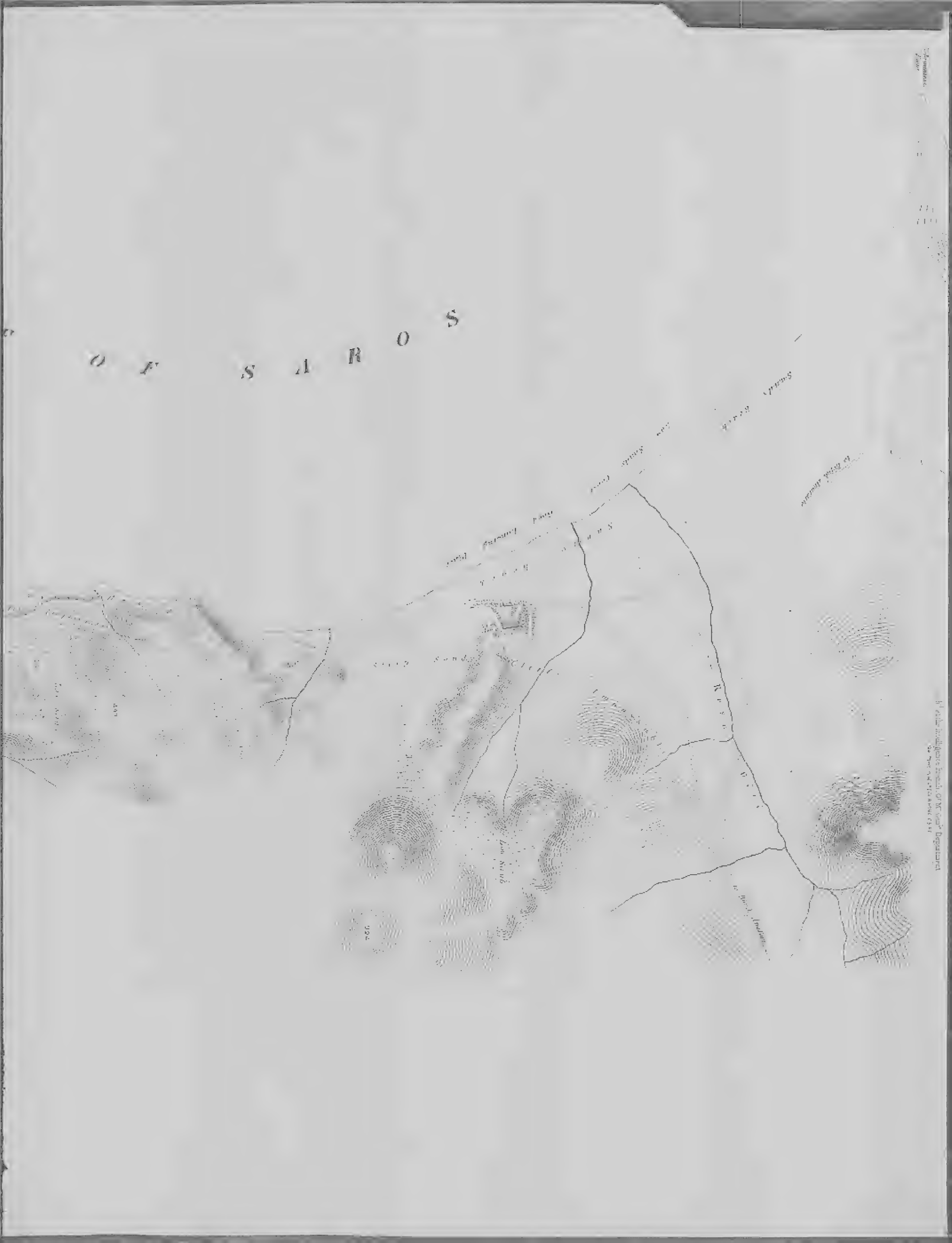

O F S A R O S

Artillery, great labour, and no small engineering skill would be necessary.

D'rdanelle to Beiramitsch 28 miles, or 10½ hours.

The distance from Dardanelle to Beiramitsch is about 28 miles, and it is accounted a journey of 10 hours. The time taken by me was 10½ hours, on horseback and without halting, keeping foot pace the whole way. The weather was unfavourable, and I noted the salient features of the route by time.

¼ of an hour

For three-quarters of an hour the road leads along the seashore, the track being sandy, but passable for wheeled vehicles. Quitting the shore, it then rises at a gentle gradient, passing, at 1 hour 20 min., the little village of Oktschular, distant from the track about half a mile to the left, or east.

Oktschular 1 hr. 20 m.

After leaving the sea coast, the track runs along the foot of hills, which rise with gentle slope, becoming abrupt and mountainous about two miles off, on the left, whilst, on the right, is a flat cultivated valley about one mile broad, bounded by hills which approach as the valley is ascended, and, at 2½ hours, the track leads up one of the spurs, becoming very steep in the ascent.

At 2 hours 15 min. the village of Salichlar is passed, distant about half a mile on the left.

Salichlar 2 hrs. 15 m.

At 3¼ hours a height of 1,200 feet has been reached, the general line of road being along the spur, the ground falling away on both sides, and being of abrupt and broken character.

3¼ hrs. height. 1,200 feet.

At 4½ hours a height of 1,400 feet has been reached, and shortly afterwards the track, which has hitherto presented no difficulty insurmountable to pioneer labour for the passage of artillery, becomes, as it descends, impassable for any traffic but that of sure-footed pack animals.

4½ hrs. 1,400 feet

At 8½ hours the little village of Tschataltschum, containing about 20 houses, is passed, and, at 9½ hours, a branch of the river Menderes Tschai is forded, and, at 10¼ hours, the river itself is crossed, either by ford, or at a little distance down its course, by a wooden bridge of weak construction.

8½ hrs. Tschataltschum. 10¼ hrs. Passage of river

This bridge is supported near each bank by a trestle, and is incapable of bearing much more weight than that of a man and horse, and is so narrow that no wheeled vehicle could pass.

The ford is about 2½ feet deep, and the velocity of the water about 7 feet per second.

Ford, 2½ ft. deep; vel. of water, 7 ft. per sec.

The whole country passed through is much wooded, chiefly with pine trees, until about 1 hour from Beiramitsch.

Beiramitsch to Narly.

The distance from Beiramitsch to Narly is about 20 miles, and 8 hours is required to perform the journey.

At 1 hour after leaving Beiramitsch, a very small village is passed, and, at 2 hours, the little village of Kysyl-Kui.

At 1 hour after leaving, the track becomes impassable for any animal but sure-footed mountain ponies and donkeys, the latter being largely employed in the whole district as pack animals.

At 3½ hours a small stream is forded, and a foot bridge of weak construction also facilitates its passage.

At 6 hours a mountain torrent is passed, either by fording it, or by a wooden bridge capable of bearing the weight of a man and horse.

The mountains passed, up to this point, are about 2,800 feet in elevation, and the point at which the stream is passed is about 2,300 feet elevation, and the track again rises to the former level, and, at 7 hours, descends very abruptly to the little town of Narly.

Narly.

Narly contains about 50 houses. It is distant about 1½ mile from the sea coast, and is about 800 feet above the sea. No road passable, even by an araba, leads from Narly, and all the traffic is done on the backs of animals.

1*st February* 1877.

T. H. ANSTEY, *Captain R.E.*

PUBLIC RECORD OFFICE, LONDON

Enclosure 6 *in No.* 20.

REPORT ON ROAD FROM CHANAK TO KUM-KALE, *via* EREN-KUI.

Road examined by Lieut.-Colonel Home, C.B., and Lieut. Hare, R.E.

Started from Chanak, and reached Kum-Kale on 25th January 1877. Weather very bad, gale of wind from the north-east, with snow. Baggage carried on pack-horses. Guide employed. Good accommodation found at Kum-Kale. It is important to observe that (though there had been much snow, and the country was excessively wet) the ground does not in any place along the road and track cut up to any depth, and that field guns could be brought along the araba track without much difficulty, even in winter.

Distance in Miles. Intermediate.	Distance in Miles. Total.	Total time in hours.	Name of Place.	Remarks.
0	0	0	Chanak ..	The road leaves the town of *Chanak* at its S.E. extremity, and almost immediately crosses the river *Saey-Tschai*, or *Rhodius*, by a wooden trestle-bridge, about 150 yards long and 10 feet wide in the clear. From the appearance of the banks, the river must be liable to heavy floods, when the channel would be 200 yards broad. The bridge appears good and strong, and would take any carriage accompanying an army in the field. The road, after passing the bridge, continues in a southerly direction along a flat and marshy plain, cultivated in places, the roadway being raised about two feet above the level of the ground, and having a drain on either side. It is partly roughly paved, and partly macadamized.
½	½	1	.. ..	Road suddenly ceases, and becomes a track, ascends a slight spur from the inland range of heights, and descends to a mill and farm, crossing a small stream of good water, with a fountain. Track then goes over a slightly undulating country.
¾	1¼	1.10	.. ..	Track descends a steep incline to a water mill.
½	1¾	1.20	.. ..	Track crosses a stream situated in a plain, apparently liable to floods, when the channel would be about 40 yards wide.
2	3¾	1.55	.. ..	Track continues along plain, and crosses a small stream by a small one-arched bridge, 6-foot span, and then runs along a narrow paved causeway, slightly raised above the level of the ground, for about 200 yards.
1¼	5	1.50	.. ..	Track next crosses a slight ridge, overgrown with stunted brushwood.
1	6	2.10	.. ..	Track descends to the seashore, and then skirts the seashore until it reaches the Quarantine Station. There is good landing along this beach for about 3,000 yards, with smooth water, with the prevailing N.E. winds. The beach is much used by numerous vessels lying at anchor, at from one to two cable's length from the shore.
½	7	2.20	Quarantine Village.	A small village of about 15 houses, chiefly wood, with a small wooden pier and landing place. Ground near the shore undulating; not very commanding over the shore.
				On leaving the Quarantine Station, the track, which is paved in the village, crosses a small stream by a small wooden bridge (good and strong), and shortly afterwards divides (one track going *via Eren-kui*, being the "araba" track to *Kum-Kaleh*, and the other, a horse track skirting the beach and shore).

Distance in Miles. Intermediate.	Distance in Miles. Total.	Total time in hours.	Name of Place.	Remarks.
				"Araba" Track viâ Erenkui.
				After leaving the Quarantine Station, the track crosses an open plain, and then enters a stunted fir wood, and winds its way, following the watercourses, to the foot of the ridge next before that on which *Eren-kui* is built. Here, a roughly-paved road ascends

				the ridge, in some places with steep gradients, and near the summit, meets a new road which the Turkish Government some time since commenced, to meet the road from *Chanak*. The new road suddenly stops on this side of the ridge, after making two returns from the top. It is paved, and passes the crest by a cutting, and, descending, crosses the stream in the valley below by a stone single-arched bridge. The pavement then stops, and a track leads straight from the bridge to the village of *Eren-kui*, improving as it approaches the village, both as regards quality and gradients.
				The portion of the road immediately before crossing the ridge by the new road, is the worst part of the road between *Chanak* and *Kum-Kaleh*, both as regards quality and gradients. (When examined, it was deeply covered with snow, and, in some places, hardly to be recognised from the numerous watercourses coming down the hill slopes.)
2¼	9¼	3.5	*Eren-kui* ..	A Christian village of about 500 houses. Some of the houses are tolerably well built of stone, but the majority have the ground-floor portion of stone, and the upper part of wood only. The town stands on a high ridge, and is surrounded by an old wall, in a ruinous condition, apparently 8 feet high. It appears to be in a prosperous condition, there being several well-filled threshing-floors, &c.
				The track descends gradually after leaving *Eren-kui*, and runs along a range of heights commanding the

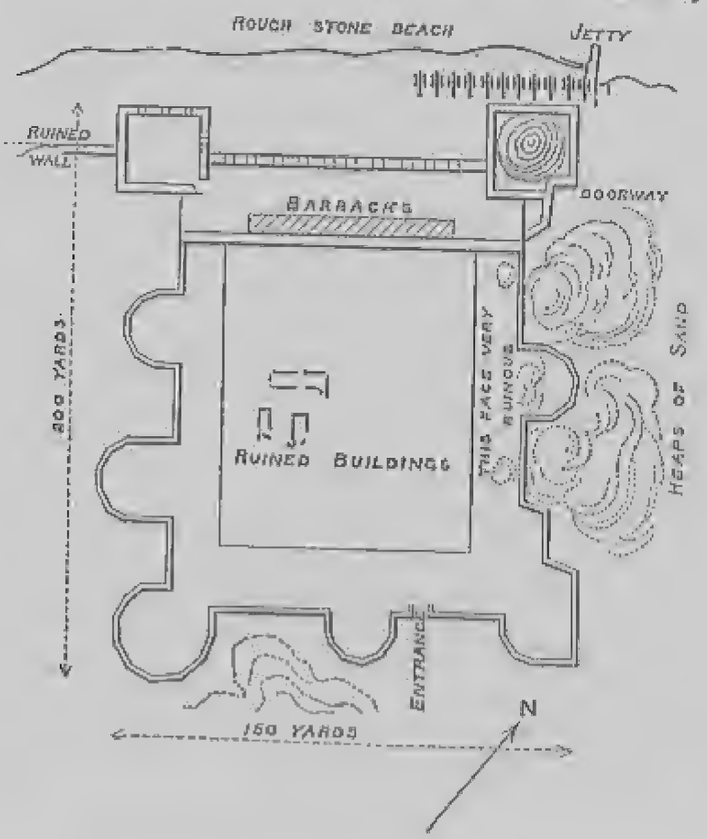
Distance in Miles.		Total time in hours	Name of Place.	Remarks.
Intermediate.	Total.			
				sea. This plateau is slightly undulating, and is partly cultivated and partly covered with stunted brushwood, the former being generally in the lower lying ground, and the latter on the higher.
2½	12	4	*Hallelih* ..	The track passes near a farm, situated in a fine open valley, with numerous large trees (something resembling an English park), and the village of *Hallelih* is seen to the southward, lying in an open plain, about a mile off.
				Track passes a Turkish cemetery, with numerous ancient fragments.
				Track ascends a slight ridge, covered with brushwood.
				Track crosses several very slight ridges at right angles, covered with brushwood on the higher portions, and cultivated in lower.
1½	13½	4.25	.. ..	Track descends to the *Plain of Troy* at a moderate gradient, leaving the tumulus of *Ta Jeplik* to the right.
				At the foot of this tumulus, the track is joined by the horse-track from the Quarantine Station, passing by the seashore.
½	14	..	.. ..	Track crosses the river, *Ta Jepek Asmak*, by a stone

				arched bridge, about 8 feet wide, without parapet walls, very solid and strong; total length, about 80 yards. Banks of the river steep, and about 7 feet or 8 feet high. Not liable to floods; little or no current; unfordable in winter, but probably not so in summer.
				After passing the bridge, the track, for the first 200 yards or so, proceeds by a paved causeway, and crosses a perfectly level, cultivated plain, with many scattered small trees.
1½	15½	5.5	Plain of Troy; River *Kalifatli-Asmak*	Track crosses the river, *Kalifatli-Asmak*, by a wooden trestle-bridge, about 30 yards long, and

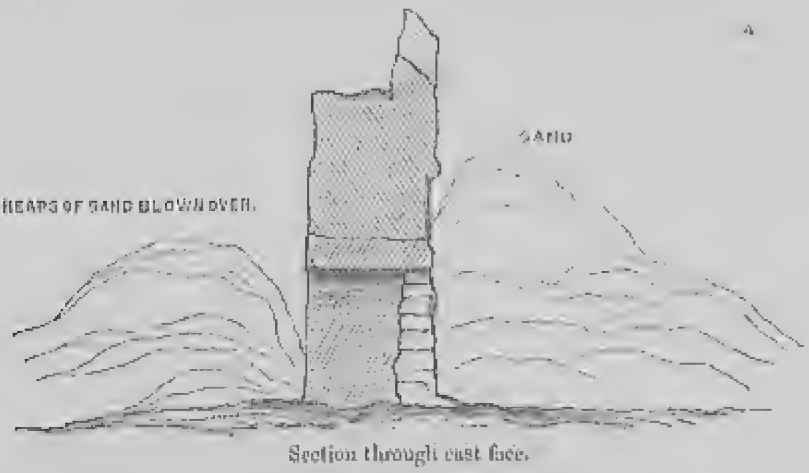
View from S.W. angle.

Distance in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total.			
				9 feet wide, with no side railings; good and strong enough for field guns. Banks of river steep, and about 7 feet or 8 feet high; current slight; unfordable in winter.
				After passing the bridge, the track proceeds by a very old and roughly-paved causeway, crossing two small bridges over old watercourses, now dry; the first being wood and trestle, the second, single-arched stone (paved causeway continues to *Kum-Kaleh*, bridges excepted).
½	15¾	5.15	River *Meander*, or *Simois*.	Track crosses the *Meander* (or ancient *Simois*) by a wooden trestle-bridge, 110 yards long and 9 feet wide; good and strong enough for field guns. Position of bridge, on a rather broad part of the river. The banks above the bridge are firm and

				steep, and about 7 feet high; below the bridge they are low and marshy in spots, but there are numerous landing sandy beaches on either bank for boats. Current about two miles an hour; not liable to floods; unfordable in winter, but probably not so in summer (from the reports of the natives).
				Causeway, after leaving the bridge, turns to the right about 80 yards from the river, and enters the village of *Kum-Kaleh*.
4	16	5.20	Kum-Kaleh	A Turkish village of about 100 houses, built on a narrow strip of sandy soil, bounded by the sea and



Distance in Miles.		Total time in hours.	Name of Place.	Remarks.
Inter-mediate.	Total.			
				the River *Meander*. The inhabitants are apparently of a farming class. The only object of interest in the village is the Castle of *Kum-Kalch*, or sand castle, sometimes called the *Castle of Asia* by the *English*, and *Chateau d'Asie* by the *French*. It is now in a ruinous condition, and is of very little military importance. The walls on the east side are crumbling away from age, and the decay, both of the mortar and stone; and the sand has been blown into heaps against the walls, to within 6 feet or 7 feet of the top. It has a castellated parapet wall on the land sides, which is in a very ruinous condition. The west and sea fronts are in a higher state of preservation, the former being armed with 13 large-bore stone shot guns, of about 15 ins. calibre, and 10 cast-iron guns on bracket-trailed siege carriages (placed outside the work on the beach), of about the calibre of a 32-pr. No attempt at embrasures has been made, the guns firing through archways in the wall. There are some ruined buildings in the interior of the work, and a modern row of barrack rooms, in which are quartered some 150 Turkish artillerymen. The fort is connected, with a single wire of telegraph, with *Chanak*, viâ *Eren Kui*.

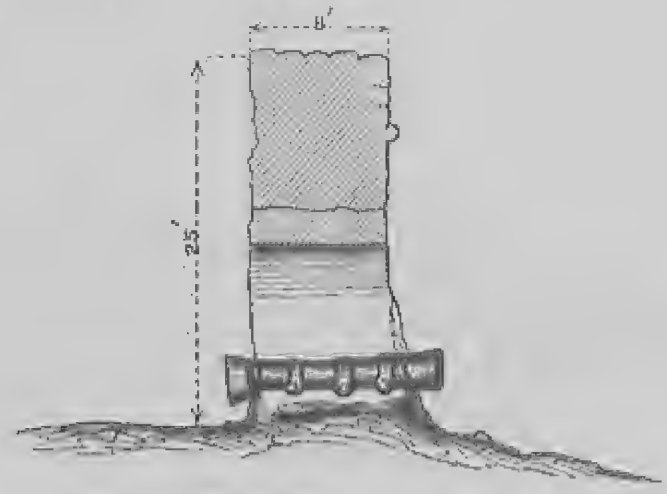


Section through east face.

Two lights exhibited on the N.E. bastion of the work (red).

There is a small jetty and landing place at the N.E. angle of the work.

The beach in front of the work is of large stones, and the water deep close in.



Section through sea face, with old Turkish bronze gun.

The work could offer no serious resistance to any vessel of war; the guns of the work, if discharged, would probably cause more discomfort to the defenders than to the assailants.

D

SKETCH

of the

COAST LINE AND ROAD

between

KUM-KALEH AND ERENKUI

CASTLE OF KUM-KALEH FROM N. E. ANGLE

To accompany Report marked E

SKETCH OF GROUND NEAR THE TOWN OF

KALEH SULTANIE OR DARDANELLE.

Scale 2 Inches to a Mile.

Enclosure 7 in No. 20.

NOTES ON THE GROUND SKETCHED IN THE NEIGHBOURHOOD OF DARDANELLE (KALEH-SULTANIET) WITH REFERENCE TO ITS CAPACITY FOR DEFENCE.

In order to protect the Peninsula, a sketch of which is appended, it would be advisable to erect works on the sites marked A, B and C.

On site "A" there is already an old redoubt with a parapet about four feet in height, and a ditch some eight feet deep. In the interior is a dilapidated stone structure which at one time was used as a powder magazine. There are bastionettes at each angle, but the parapet is now a mere mound of earth, with but little trace of its original section. The whole of the ground around is commanded from this site up to the foot of the range of hills running about N.W. and S.E., as shown on the drawing.

A little over 3,000 yards to the N.E. of site "A," a clump of pine trees marks a spot known as "Seven Fir-trees Hill," and about 500 yards to the S.E. of this clump is a second position marked "B."

The whole of the ground to the N.E. and E. is commanded from this spot, while the plateau itself could be swept by the fire from the guns in a work erected here to a very great extent, and it would effectually flank site "A."

Another favourable site for a work would be on the spot marked "C," about 700 yards south of the village of Karadschören.

It is about 2,700 yards from "A," and about 1,700 from "B.," and whilst sweeping with its fire to a large extent the plateau and ground to the south, would be well flanked by works on the two other sites. Beyond the limits of the appended sketch a range of high hills (distant from "B," 5,500 yards) runs to the N.N.E., and joining the plateau shown on the sketch by a narrow neck of land wends away to the south for about 1,500 yards, and then takes a more easterly direction.

South of the River Rhodius a precipitous range of mountains runs parallel to the river, and rises about 3,000 yards from it.

T. H. ANSTEY,
Captain R.E.

February 1 1877.

No. 21.

CONSTANTINOPLE,
5th February 1877.

Sir,

On the 15th January I had the honour to inform you that I had received certain instructions from the Marquis of Salisbury, and in my letter, No. 17, 15. 1. 77, I had the honour to prepare for His Royal Highness's approval a programme for carrying out Lord Salisbury's orders.

Subsequently, on the 16th, Lord Salisbury and Sir Henry Elliot both expressed a wish that an officer should be sent to report on the military state of Batoum and the Turkish force there. Acting under these orders, Captain Fraser was detailed to perform this duty.

On the 26th January I received a letter from Sir Henry Elliot (copy enclosed), and in accordance with Lord Salisbury's instructions approved of and confirmed by your telegram of the 24th, I directed Captain Ardagh to proceed to England, *via* Egypt. And in accordance with the same telegram I directed Captain Anstey to proceed to England, *via* Odessa. On my return to Constantinople, on the 1st February, I reported by telegraph that I had given these instructions, and I also informed you that finding the passes of the Balkan closed at that time, I proposed carrying out Lord Salisbury's special

missions to Rhodes and Cyprus, and returning to Constantinople in a month and then proceeding *via* the Balkan to England, as laid down in your telegram of the 24th. On the 4th February I received instructions that neither Egypt, Rhodes, Cyprus, nor any other portion of the Turkish Empire was to be examined; and that further orders would be sent.

Under these circumstances I beg to attach a statement of the exact whereabouts of each officer on this day, the 5th February.

I have the honour to be,
Sir,
Your most obedient servant,
R. HOME,
Lieutenant-Colonel R.E.

DETAIL of Officers of the Royal Engineers serving in the East on the 5th instant.

Lieutenant-Colonel Home, at Constantinople, returned on the 1st February from the Dardanelles.

Captain Grover, at Constantinople returned on the 2nd February from the Dardanelles.

Captain Fraser, at Trebizond, *en route* from Batoum to Constantinople, left Constantinople for Batoum on the 18th January.

Captain Austey, on passage to Sebastopol, *en route* for Odessa and England, left on the 4th February.

Captain Artagh, on passage to Egypt, *en route* to England, left on the 1st February.

Lieutenant Hare, Constantinople, returned from the Dardanelles on the 29th January.

Lieutenant Cockburn, Constantinople, returned from Roumelia on the 4th February.

Lieutenant Chermside, on the road from Adrianople to Constantinople.

R. HOME,
Lieutenant-Colonel R.E.

5. 2. 77.

Enclosure in No. 21.

[COPY.]

CONSTANTINOPLE,
January 24, 1877.

Sir,

I HAVE received a telegram from Her Majesty's Secretary of State for Foreign Affairs to the following effect:—

It is requested by the Secretary of State for War that you will desire the Engineer Officers under Colonel Home, who are not employed on missions intrusted to them by Lord Salisbury to return to England at once as travellers, each taking his own way. If practicable it is suggested that two, including Captain Austey, should return by Odessa—one by Jassy, and the other by Woloczyska, and others by different routes across the Balkans, by Burgas, Varna, Pravadi, Schumla, Rustchuk, Silistria, Matchin, Isaktcha and Soultscha. One of the officers (not Captain Frazer) may be retained by Colonel Lennox, if he should desire it.

I have, &c.,
(Signed) HENRY ELLIOT.

No. 22.

CONSTANTINOPLE,
Sir, *5th February* 1877.

I HAVE the honour to forward a report on the roads leading from Boulair *via* Scharkoi, Rodosto, Lüle Burgas, Kirk Killissi, Wisa, Midia, Kilia, Therapia, on Constantinople.

This report has been prepared by Lieutenant Cockburn, who has experienced great difficulty in getting through the country owing to heavy rain and snow storms.

The report now furnished, taken in connection with that forwarded with my letter, No. 19, and with another which I hope to forward shortly, will give full details of all the important roads eastward of Adrianople.

I have endeavoured to procure information in some detail as to these roads, as in case of the occupation of the Buyuk—Derkos lines, Kirk Killissi, Lüle Burgas and Wisa are very important points to hold in advance.

The statistics given by Lieutenant Cockburn of the resources of the various villages, will, I hope, prove of value, should an English army ever operate in this country.

The country between the three towns named is excellent cavalry ground, and has been always noted for the supplies of forage it produces in the spring. The places named would form valuable points of observation whence small bodies of cavalry pushed forward to feel the enemy would command every track or road by which he could advance, and could communicate with the sea at Rodosto and Midia on each flank.

The main Adrianople road from Siliveri to Adrianople, *via* Lüle Burgas, has not been examined, as full information of it already exists.

The difficulties experienced by Lieutenant Cockburn in getting from Wisa to Midia confirm what I had the honour to state in my report $\frac{F}{N}$ 17. 12. 76, that the Black Sea, from the Bosphorus to Varna, is not likely to prove of much value as a base to disembark an army to strike at the communications of a Russian force which had passed the Balkan and was in Rumelia.

The whole coast line being hemmed in and cut off by the Little Balkan range, which forms the watershed between the Sea of Marmora and Black Sea.

It is this ridge which reduces the military value of the harbour of Burgas.

This harbour was of great importance in 1829, because the Russians had command of the sea, and used it as a base to feed their troops as they debouched by the Aidos from the Balkan, Varna having been previously captured. But if Schumla, Pravadi and Varna are held, the passes eastward of Osman Bazar would be denied to the Russians, and they would thus be shouldered off to westward; and it would appear, therefore, that so long as these three places are held by the Turks, it is from them that a movement should be made on the Russian communications rather than from Burgas, through the difficult passes of the Little Balkan. The actual distance from Burgas to Jeni Sara, the first place a Turkish force could hope to strike the Russian communications, on the supposition that Pravadi, Schumla and Varna, are held, is actually greater than from Schumla to Rustchuk.

The fact that Burgas has little export trade, and that much corn grown in Rumelia reaches Constantinople, *via* Enos and Dedjaghatch, shows that the difficulties of transport, that is to say, the badness of the roads, forbids the use of Burgas, despite the excellence of the harbour.

I have the honour to be,
Sir,
Your most obedient servant,
R. HOME,
Lieutenant-Colonel R.E.

The Inspector-General of Fortifications.

Inclosure in No. 22.

ROUTE No. II.

REPORT ON ROAD FROM BOULAIR (GALLIPOLI) TO CONSTANTINOPLE,

VIA

Rodosto (by coast road), Lule Burgas, Kirk-Killissi, Baba-Eski, Lule-Burgas (second time), Wisa, Midia, Derkos, Kilia, and Therapia.

Road examined by Lieutenant G. A. Cockburn, R.E. Started 15th January 1877; reached Pera, 3rd February; average distance travelled per day, 23½ miles.

Weather as under:—

15th January.—Rain.
16th ,, Ditto.
17th ,, Snow and rain.
18th ,, Sleet and rain.
19th ,, Fine.
20th ,, Fair till noon, then snow.
21st ,, Snow and wind.
22nd ,, Strong gale charged with ice and snow off the mountains.
23rd ,, Ditto, ditto, with increased violence. Travelling impossible.
24th ,, Fair; snow on ground.
25th ,, Snow and strong N. gale } Travelling impossible.
26th ,, Ditto ditto }
27th ,, Ditto ditto }
28th ,, Fair; deep snow.
29th ,, Snow.
30th ,, Fair; deep snow.
31st ,, Fine; ditto.
1st February.—Fair; snow left behind after four hours' travelling.
2nd ,, Fine.
3rd ,, Heavy rain.

Baggage carried on pack-horses. Guides hired. Neither hotels nor inns. Stable for horses and room to sleep in all that could be procured. Roads, when not under snow, heavy and wet.

Distances in Miles.		Time in hours, taken by pack animals in bad weather. (Total.)	Name of Place.	Remarks.
Intermediate.	Total.			
				15th January.—The road, immediately on leaving Boulair, becomes an ill-defined wheel-track, passes through arable cultivation to head of Soujouk Déré—a small marsh, difficult to cross in wet weather (scrub for fascines ¼ mile to left)—rises gently into wood of stunted oak (unfit for building purposes), and descends to large stone "tchiftlik" (large outhouses and sheds, windmill, and well). Bridle track branches off here across the hills, to Peristeri. Road skirts along lower slopes of a line of volcanic hills (running parallel to the shore of the Gulf of Saros), no streams larger than small rivulets; easy gradients, with exception of ravine (1/20). Fountain. Here track (rough, and ill-defined) trends eastward, and rises in series of gentle ascents and descents to crest of ridge, dividing Sea of Marmora and Gulf of Saros, and descends (fountain) through arable cultivation to "Examili."
1	1	½	Soujouk Déré	
1	2	1	.. ..	
1½	3½	1⅔	.. ..	
2½	6	2¾	.. ..	
2	8	3 5/6	.. ..	
1	9	3½	Examili ..	(Greek). 50 houses, wooden, 3 fountains (on loam). Track, wide and bad, over loam, continues its easterly direction across the head of the peninsula, through arable cultivation. Fountain and streamlet, marshy banks, coated with small undergrowth.
¾	9¾	3¾	.. ..	

Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total.			
¾	10½	4	.. ..	Fountain crosses streamlet, passes large stone tchiftlik 400 yards to right (enclosing 6 or 7 houses and outbuildings is a high stone wall), situated at tail of line of hills, running parallel to Sea of Marmora (the Tekir Dagh).
		4 1/3	.. ..	Fountain, and track to above-named tchiftlik.
		4¼	.. ..	Track enters low scrub (juniper, thorn, and oak), and skirting line of hills, continues to approach Sea of Marmora; narrows to about 8 feet through scrub.
1½	12	4 5/6	.. ..	Large tchiftlik, with buildings enclosed by stone wall, 1½ miles to left.
		5 1/12	.. ..	Crosses small stream (15 feet), shallow (said to be), liable to freshets, steep banks; outcrop of hard black stone, suitable for road making, scattered along track for about ¾ mile in large lumps, interfering with traffic.
3	15	5½	Kulschaly ..	(Turkish) village, about 30 houses, seen 1½ miles to
			Jusily ..	right in a valley. Another small hamlet (Greek) 1 mile higher up the valley.
		5⅔	.. ..	Streamlet, steep banks. Track approaches, on high
		5 11/12	.. ..	and precipitous slopes, to within ¼ mile of sea. Runs very steeply (1/5) down to shore, runs along it (shingle and sand) for ¼ mile, then passes behind a
3	18	6 1/12	.. ..	natural parapet of ground for ¾ mile, returns to shore
		6 5/12	.. ..	and resumes course along it, rises to 30 or 40 feet
		7¼	.. ..	above sea level; returns to it again; fountain; track quits sea, and runs across a cultivated (vineyards) flat piece of country to
4	22	8	Peristeri .. (Schar-koi)	Peristeri (mixed population, Turk and Christian), 1,000 houses (a few stone, rest wood); can furnish 80 horses, 100 arabas, 80 pairs oxen and buffaloes, 600 sheep. Produces 10,000 kilos. of wheat, 300 kilos. of Indian corn, very little barley, 10,000 okes of wine. Is situated at the confluence of two or three small mountain streamlets; suffers (said to) from scarcity of water in summer. Exposed anchorage, and small wooden jetty. Fishing carried on by the population when unable to carry on agricultural pursuits, but no export trade in. Said to be healthy.
	22	8	.. ..	*16th January.*—Track over loam, and very indifferent in character, runs across a cultivated flat, at
		8 1/20	.. ..	about ¼ mile distance from sea. Village (Arabby)
		8.45	.. ..	seen 3 miles (right) on a high spur. Fountain.
3	25	9	.. ..	Crosses streamlet (12 feet), with high clay banks, and arrives at
			Eriklidscha	(Greek), 300 houses, surrounded by vineyards, situated on flat ground little above sea level. Quitting village, track runs down to sea. Fountain. Tileries commence to be seen, and continue at intervals along the whole route as far as "*Chora.*" Road track only appears at intervals, the beach (large shingle) forming the main part of road.
		9.15	.. ..	Told that there are no arabs roads other than the line of the beach, which serves as main line of communication.
		10.23	.. ..	Crosses the outlet of a mountain stream (bed 24 feet across, and full of large boulders), rounds a promontory, and enters "Myriophyto." Mixed population (Turks and Christians): 800 houses, nearly all wood, situated on a flat promontory.
4¼	29¼	10.30	Myriophyto	Productions and capabilities much the same as Peristeri, except that there are fewer horses, oxen, and arabas. Said to be healthy.
				The hills begin to close in upon coast, terminating in low elevations of a few hundred feet in height, the intervening space being broken, uneven ground (mostly clay). Many tile manufactories.
		10.45	.. ..	Coast track entirely disappears, and beach (large
		11.	.. ..	shingle, heavy and difficult for horses to traverse)
		11.15	.. ..	becomes sole line of route. The latter crosses mouths of small mountain streams debouching through high clay banks.

Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total.			
		11.20	.. ..	Fountain.
		11.30	.. ..	Small streamlet.
		11.40	.. ..	Fountain. Iron lighthouse on high promontory.
		11.45	.. ..	Route rounds promontory, and crossing wide stony bed of a mountain stream, enters Chora (Greek), 800 houses (wood), situated on the Delta, formed by mountain streams running down valley opening out to N.W.
4	32½	11.50	Chora ..	The coast route beyond this, and also the portion from Myriophyto to Chora, is much interfered with by the mouths of the small rivers before-mentioned, the beds of which are usually full of large stones swept down from the mountains. Leaving Chora, the route crosses a broad mouth of the above nature (500 yards across).
				The hills close on to shore, terminating in almost precipitous slopes. Beach remains as before (shingle).
		12.25	.. ..	Mouth of small streamlet.
		12.35	.. ..	Fountain.
3	35½	12.50	Ganos ..	Shore route arrives at Ganos, situated on a projecting spur between the beds of two mountain streams, said to become torrents after snow, or much rain, in the hills. Greek, 550 houses (wood). Bridle paths, said to be so steep and difficult that they cannot be traversed on horseback, lead to *Rodosto*.
				The mountains now close on the shore, terminating in high cliffs, 300 and 400 feet in height.
		13.10	.. ..	Streamlet and fountain.
3	39½	13.45	.. ..	Large valley opens out to the left, forming the bed of a mountain torrent. Route along shore stopped by cape projecting precipitously into sea.
				A shepherd's track leads up valley, and rises very steeply on to ridge, sloping from Bakalchak Tepé to sea, crossing which it descends equally precipitously to Ardines. Track so narrow (2 feet to 3 feet), steep, and difficult in consequence of outcrop of slippery shaly rock, that horses were with difficulty lead over it. Lower slopes coated with vines; higher, coarse scrub. In consequence of soft nature of rock, a better track could be easily and quickly made. In its present state, unfit for the passage of anything heavier than mountain artillery.
		15.30	.. ..	
3	42½	15.50	Ardines ..	Greek village, 100 houses (wood), 1½ miles from sea, at the junction of two valleys, which form the bed of intermittent mountain torrents. Embedded on all sides, except sea, by precipitously steep hills, the lower slopes of which are studded with vineyards. Centre of the wine district. The cultivation of the grape the sole industry of the place. Produces 600,000 okes (grapes) yearly. No corn, barley, or Indian corn. 120,000 goats and sheep, 200 mules, 20 horses belong to the inhabitants. Water, in consequence of intermittent nature of mountain streams, said to be scarce in summer throughout the district.
				17th January.—Track, same character as that of previous day, passes up gorge to S.W. of village, and thence winds slowly to top of high ridge (3,400 or 1,000 feet above sea level). Thence descends precipitously to Jeni-Keui (Greek); 140 houses (wood); situated in gorge surrounded by high precipitously steep hills. Outlet towards sea. Distance from latter about 1 to 1½ miles. Track again ascends, and after half an hour, improves so far as to render riding possible, though route is still narrow, rough and steep. In this condition it passes over three main ridges.
		16.30	.. ..	
4	46½	17.15	Jeni-Keui ..	
		19	.. ..	Fountain.
		19.30	.. ..	Finally descends, firstly over open and more gently undulating country, and thence abruptly over steep scarp to Kumbas.

Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total.			
4½	51	20	Kumbas ..	On the sea (Greek), 120 houses, 6 windmills, 3 fountains. Arabá road commences and continues as far as Rodosto, and being for the most part over sand, is of a fairly good character; cultivation (corn, barley) and a few vineyards continue along the whole route.
		20 1/60	.. ..	Fountain. Road runs across a wide flat valley, at a distance of 300 or 400 yards from sea.
		20 2/60	.. ..	Crosses stream (45 feet wide, 3 feet deep, low banks) over a wooden trestle bridge (in a bad state of repair, a few scattered trees in valley available for the purpose).
		20 4/60	.. ..	Road reaches shore (sandy beach), along which it runs for 10 minutes. Thence crosses elevated headland (track steep and bad, over hard), passes stream by ford, 45 feet across (stone bridge broken); high steep banks, enters village of Panados.
2½	53½	20 8/60	Panados ..	Greek and Turk, 140 houses (wooden), 3 windmill. Road runs along cultivated ground (loam), gently sloping to the sea, at a distance of 300 to 400 yards from shore. Paving appears at intervals.
		21 1/60	.. ..	Fountain. Track, crosses high undulating ground, descending to shore (sandy beach), along which it runs for remainder of route.
		21 4/60	.. ..	Small wooden bridge over unimportant streamlet.
		22	.. ..	Fountain.
		22 1/60	.. ..	Two fountains.
		22 2/60	.. ..	
4½	58	22 3/60	.. ..	*Rodosto* (described in route, No. 1).
				18th January.—Rodosto to Lule Burgas.
		22 4/60	.. ..	The road wide and good (metalled with hard black stone, brought from interior), quits the town over a small wooden bridge (30 feet), spanning a deep gully, and rises over hill, passing a *fountain* and *eleven mills*. Four telegraph wires on *left*, and one on *right* of road.
		23	.. ..	At hill top, a road diverges to "Malkara." Five telegraph wires follow the latter route; main road crosses, at gentle gradients, wide fertile valley (arable cultivation), many small scattered trees. Fountain. Small streamlet crossed by wooden bridge, 18 feet span, stone abutments. Small tchiftlik, 400 yards to left. Passing over undulating country, road reaches bare, down land; breaks in the metalling begin to occur.
		23 4/60	.. ..	
		24	.. ..	Large stone tchiftlik, with many outhouses and sheds, ½ mile to left; metalling ceases on road; latter descends to streamlet; small stone bridge, 12 feet wide, 30 feet span. Fountain. Ascends steeply (track irregular and bad). Tchiftlik seen ½ mile to right.
		24½	.. ..	Arrives at top of hill, and commences to run across bare rolling downs. At this point a well laid out and partially finished wide road commences; culverts and side ditches completed, metalled in strips, here and there hard stone broken up, and laid in heaps by side. The old route degenerated into a series of wheel tracks, follows irregularly the new one. This new road (I am told) is intended to be completed as far as Adrianople; but even in its present unfinished state, only reached "Injaly." Said to have been commenced ten years ago. Gradients of both old and new roads over the whole of this down country *very gentle*.
				All tchiftliks passed on this route for grazing and horse breeding farms. Large herds of sheep and horses seen throughout the day. Said to be great scarcity of water in the summer, except in immediate vicinity of the "Ergine Déré."
		25½	.. ..	Soil, sand and gravel.
		26	.. ..	Large stone tchiftlik, in hollow, ½ mile to right.
		26 2/3	.. ..	Stone tchiftlik, ¼ mile to right, in bend of downs
				Very large tchiftlik, many outhouses, in hollow, 600 yards to right.

Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total.			
		27	.. ..	Tchiftlik 200 yards to right.
		27¾	.. ..	Tchiftlik, 1½ miles to right, seen in broad flat valley, running parallel to route.
		28¾	.. ..	Cultivation appears in patches; track, gently descends; reaches Injaly (Turk); 25 houses (wood and mud); high trees in and about village. Road passes it to left, and crosses stream (ford); high loam banks 45 feet across. Fountain.
20	78	29¼	Injaly ..	
		29¾	.. ..	Cultivation ceases, and wheel track runs across a gently undulating grassy plain.
		30	.. ..	Streamlet.
		30 2/3	.. ..	Streamlet.
		31 1/3	.. ..	Track runs close to two grazing farms.
			Good situation for encampment. Soil gravel.	Two hamlets (Bousalem and Beglis) seen about 3 miles to right.
		31½		Sheep farm ¼ mile to right. Large stone tchiftlik ¼ mile to left.
		31 2/3		Reaches *Ergine Déré*, 90 feet wide, loamy banks 4 feet high, crossed by trestle bridge (requires strengthening). No trees or wood near.
8	86	31 5/6	.. ..	Sheep farm 150 yards to right. Passing which track crosses "railroad" (single line, 4 feet 6 inches gauge). Station (Lüle Burgas) 100 yards to left (brick). Three wires detach to town of "Lüle Burgas." Wide metalled road commences and runs straight to the town over perfectly flat country. Cultivation arable and vine. Two small wooden bridges over rivulets.
3	89	33	Lüle Burgas	*Lüle Burgas.*—Situated at the head of a broad flat valley (rich loamy clay soil), down which the "Kuruglutsch" (called also the "Jeun") Déré, 60 to 90 feet wide, and 2 feet deep, slow current near town; said to be nearly dry in summer.
				1,000 houses (a few stone, mostly wood and mud). Population 6,000 (Greeks, Turks, and Jews). 30 dependent villages. Can furnish 40 pairs oxen and buffalo, or 140 pairs, including those in dependent villages, 30 horses, 800 sheep and goats, and 40 arabas. Produces annually (including dependent villages) 220,000 kilos. of wheat, and about same of barley and Indian corn (included together). 40,000 okes of grapes. 20 fountains in town. Telegraph communication with Adrianople, Constantinople, and intermediate stations. No paved or metalled roads at present join in here, but (I am informed) a wide metalled road, to connect Lüle Burgas with "Hissar," is in process of construction from the latter place. Ordinary (unmetalled) tracks exist to *Adrianople*, "*Pedarla*," *Ivrikdy*, *Kirk-Killissi*, *Wiza*, and *Hissar*, said to be *healthy*.
				19th January.—Route from *Lüle Burgas* to *Kirk-Killissi*.
				Road on quitting the town crosses the Jeun Déré at its junctions with two small streamlets, by two shallow fords—hard, gravelly bottoms, low clay banks—rises gently over clay soil (wheel tracks heavy and undefined) up the right side of main valley, slopes under cultivation, wheat, vines, &c., and studded with small fruit trees. Large sheep farm about ¾ mile up the Jeun Déré, banks of latter studded at that point with trees of moderate size. Tilery seen outside the town. Track reaches top of ascent, runs evenly over a gently undulating plateau.
1½	90½	33½	.. ..	Cultivation ceases. Road (wheel track) reaches *gravel*, on which it continues (with occasional interruptions, of small extent, from *loam*) throughout route. All its gradients are very gentle; grass, studded with sparse scrub, commences on cessation of cultivation. Village seen 3 miles to left.
		33¾	.. ..	
		34 1/3	.. ..	Rivulet—low banks, coated with willows.
		34 2/3	.. ..	Rivulet.
		35¼	.. ..	Small stream (Tuscherly Déré) easily fordable.

Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total.			
				banks coated with thick scrub. Scattered trees (oak) begin to mix with the scrub.
7½	98	35½	Belik Wood	Track enters wood (chiefly oak), some trees of large size. Streamlet and well. Wood very variable in character, trees being thick and of fair size in hollows, sparse and degenerating into scrub on elevations. Said to extend right and left to a distance equivalent to 3 hours' march (9 miles). Cutting wood therein a government monopoly.
		36⅓		
5	103	36¾	Kavai ..	Wood ends. Track passes ¼ mile to left of Circassian village, 20 houses, wood and mud, situated at head of a gentle valley, down which runs streamlet of same name.
				Track runs gently off the plateau (over gravel) into a broad valley, down which runs the Uskub Déré (same as Kawak Déré on Kiepert's map). Reaching valley, track slowly closes on river, crossing it by ford—gravelly bottom—bed 40 yards wide, but not entirely covered with water, moderate current. Depth from 6 inches to 2 feet. Banks, low and firm. Wood (fair-sized trees) 100 yards lower down on right bank. Said to *nearly* dry up in summer. Cultivation appears in patches. Route ascends (*gently*) right side of valley, and skirts plateau of same nature as before. Roadway becomes more defined, and of *fair* character (still over gravel and sand).
2	105	37 1/3	.. ..	
¾	105¾	37¾	Gasilboilli ..	(Turkish), 25 houses—wood, stone, and mud (three arabas, each with yoke of oxen, seen). Track joins in from Baba-Eski.
		38¼	.. ..	Cultivation up to this point, chiefly arable and in patches, becomes general, and changes to vineyards (loam). Paved road commences, and continues to within ¼ mile of Kirk-Killissi. Along its course are two wells and one fountain.
6¼	112	39	Kirk-Killissi	3,000 houses, a small number stone, but chiefly of wood, with stone basements. 15,000 inhabitants (500 Turks, rest Jews and Christians), 33 dependent villages. Can furnish 200 to 300 horses, 350 oxen and buffaloes, 3,000 sheep and goats, 120 arabas (probably more, as wheels, &c., for them are manufactured in town). Produces annually :—

Wheat ..	10,000 kilos	* Those statistics do not include those for dependent villages. Average yield of latter may be taken (me told) at about 1,000 each as total for all sorts of grain.
Barley ..	10,000 "	
Indian corn	1,000 "	
Wine ..	400,000 okes	
Rakí ..	100,000 "	
Linseed ..	40,000 "	

Weaving (imported cotton), and manufacture of native cloth, carpets, &c., extensively carried on in town.

Water supply abundant, 15 fountains, 500 wells.

Quarries of hard (white) stone said to exist at Mandra, between *Kirk-Keui* and *Lüle Burgas*.

Charcoal said to be obtainable in large quantities from—

Skopo	distant 3 hours.	
Jeun	" 4 "	
Dwrea	" 6 "	
Urumbelli	" 7 "	

Telegraphic communication with *Wiza* and *Baba-Eski*.

The town is situated on two low spurs of a line of hills, that rise gently from the flat country stretching S. and S.W. No good strategical position presents itself for occupation by a force covering Lüle Burgas, from an enemy advancing from Kirk-Killissi. General characteristics of route are—(1) Generally fair character and easy gradients of track; (2) Absence of water in any considerable quantity said to be especially marked in summer; (3) General presence of small wood and scrub.

Distances in Miles. Intermediate.	Distances in Miles. Total.	Total time in hours.	Name of Place.	Remarks.
				Routes (all said to be indifferent in character) converge from *Adrianople*, *Midos*, and *Wisa*.
				A good metalled road, partially completed (commenced 3 years ago) from *Baba-Eski*. (See next day's route).
				Kirk-Killissi to *Baba-Eski*.
				20th January.—Route runs along a wide (20 feet to 30 feet), hard, metalled road, with regularly constructed culverts and side drains, which, with imperceptible gradients, traverses an undulating plateau. Vine cultivation extends for about 3 miles from town. Vineyards, studded with small trees. Telegraph (1 wire) follows this route.
		39½	.. ..	Well. Hamlet of "Karadu" seen ¾ mile to right.
		40⅚	.. ..	Well. Vine cultivation ceases. Trees become sparse. Arable cultivation continues in patches.
		40⅞	.. ..	Wooden bridge (14 feet long) over small streamlet, stone abutments. Enough trees scattered about to repair, if necessary.
5½	117½	40½	Kawakly ..	Road passes to left of this village (Greek), 80 houses (wood and mud), contains large trees. Situated on the left bank of valley, down which a small tributary (crossed by bridge above-mentioned) of the Téke-Dereski runs.
		40¾	.. ..	Small wooden bridge over gap in made embankment (good place for destroying road). Sparse wood of small oak to left.
		40⅞	.. ..	Completed road ends. Roadway laid out, culverts built, and metalling in many places laid ready in heaps. Side ditches made. Old track continues to traverse same line.
		41¼	.. ..	Cultivation ceases entirely, as also detached trees, and route crosses open down land. Completed patches of roadway occur at intervals.
		41¾	.. ..	Telegraph quits line of route, trending away to the left. Old track follows same line.
		42¼	.. ..	Completed roadway recommences, but appears not to have been so carefully finished as previous portion. (Requires rolling and more metalling.)
		43¼	.. ..	Oak scrub on left, trends gradually away from road, and terminates in small wood ¼ mile to left.
				Horse breeding farm in hollow ¼ mile to left. New road ceases.
9	126½	43½	Kara-Mussu	Large tchiftlik seen in valley 2 miles to right. Track begins to descend very gently towards valley on the left (down which runs the Kawak Déré).
		43⅞	.. ..	New road (completed) recommences and continues uninterruptedly to Baba-Eski. This portion has been made by the municipality of the latter town, and is by no means so carefully finished as that portion done from Kirk-Killissi. More metalling and rolling required. Stone for the metalling appears to have been procured by picking out the large ones from the gravel soil, over which this day's route has principally passed.
		43⅞	.. ..	Cultivation (arable) occurs in patches.
		44⅛	.. ..	Two hamlets seen, one ½ mile to left, the other ¼ mile from it, and higher up the valley. (Large trees in both.)
		44⅜	.. ..	Descent ceases, and road runs evenly along partially cultivated ground, sloping very gently towards the Kawak Déré.
		44½	.. ..	Small wooden bridge over streamlet, 20 feet wide. No trees nearer than those in above-mentioned hamlets for repair of it.
6½	133	45¼	.. ..	Crosses telegraph lines (one set of three and one of two wires) from Adrianople. Joins latter road, enters Baba-Eski.
6½	133	45½	Baba-Eski ..	(Greek and Turk). 500 houses (chiefly wooden). Can furnish 50 horses, 90 pairs of oxen, 3,000 sheep

Distances in Miles. Intermediate.	Distances in Miles. Total.	Total time in hours.	Name of Place.	Remarks.
				and goats. Annual produce, 1,000 kilos. of wheat and barley. Water plentiful and good. Situated on the right bank of the Kawak Déré, towards which the ground falls very gently from the N.W. Partially under cultivation, and destitute of trees.
				21st January.—Baba-Eski to *Lüle Burgas*.
				(N.B.—Ground covered with snow from fall during previous afternoon and night. Also a tearing N.E. wind, filling the air with minute particles of snow. These circumstances rendered it impossible to ride across country and minutely inspect positions, also made note taking a matter of some difficulty. This explanation is necessary to account for the fragmentary nature of day's report.)
				Leaving the village, the road-way crosses the "Kawak" (about 100 feet wide, 3 or 4 feet* deep, at this point, moderate current) by a strong stone bridge, capable of carrying any weights connected with an army. Roadway, 20 feet wide, 18-inch parapet walls, 6 arches. Passing this, the roadway (metalled) crosses a marshy piece of ground, over five small wooden bridges. 1st, 6 feet long. 2nd. 18 feet (bad repair). 3rd. 14 feet (bad repair). 4th. 4 feet (recently mended). 5th. 7 feet long.
		45¾	.. ..	Passing these, the track (metalling ceasing) rises over the gentle slopes of left side of valley on to rolling country, which falls gradually towards the Ergine from the plateau, along which the Lüle Burgas and Kirk-Killissi road passes.
				This rolling ground extends the whole way to Lüle Burgas, and is intersected by many small water courses (all dry in summer) which empty themselves into the Ergine. Snow prevented nature of cultivation and soil being seen, but the former is believed to be down land, interspersed with patches of arable cultivation near villages; latter loam and gravel.
		46	.. ..	Wooden bridge over streamlet. Track to right, leading to Baba-Eski Railway Station.
		46¼	.. ..	Small stream (fordable), wooden bridge broken (Jarytschesehmo Déré).
			Alpulu ..	On left bank, 1½ miles to right of road, Alpulu (Greek); trees in and near village. Track branches off to
		47	.. ..	Large tchiftlik seen in valley ¾ mile to left.
		47⅛	Sarmusakly	Streamlet crossed by small stone bridge (1 span 12 feet).
				Sarmusakly (Turk) seen ½ mile to right.
		48	.. ..	Streamlet, wooden bridge broken (trees in village for repair of).
		48⅛	Ewrendu ..	Streamlet, wooden bridge broken. Village of Ewrendu (Turk) seen 2 miles to left.
		48⅜	.. ..	Streamlet, remains of wooden bridge. Tchiftlik (with trees) ½ mile to right.
		48½	.. ..	Streamlet, wooden bridge carried away.
		48⅝	.. ..	Streamlet, wooden bridge broken.
				Track descends steeply into main valley of the Jeni-Déré, which it crosses by a strong stone bridge (4 arches) 90 feet long, 20 feet wide, 18-inch side walls. The river is also passed by a ford (hard bottom, 2½ feet greatest depth); low swampy banks.
13	146	49¼	Lüle Burgas	Track enters Lüle Burgas.
				Snow prevented the track being clearly seen, but enough was indicated to show that (generally speaking) it was irregular and bad. Said to be extremely difficult to traverse by teams after much rain. Streamlets readily accumulate in its passage across the various small valleys that intersect its course.

* This was after bad weather, ordinary depth not more than 1 foot 6 inches to 2 feet.

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The line of the "Kawak" presents a position for the defence of the above described road from an enemy advancing from Adrianople. The ground on the left bank of this river rises more steeply than that on the right, and therefore commands the latter, which, being destitute of trees, affords no shelter to cover an enemy's advance down it.

Protection for the right flank would be afforded by the Bélik wood, for the left, by the Ergine Déré. It would, however, probably be necessary to occupy some rising ground on the left bank of Ergine (which weather did not permit examination of). Communication with a force detached in this direction could be maintained by the road from "Alpulu" to "Ireboly."

Advantages of this position may be enumerated as under:—

(1.) Open frontage.
(2.) Protection of flanks afforded by the Bélik wood and Ergine (with swampy ground near Baba-Eski).
(3.) Command of the junction of the Adrianople and Kirk-Killissi roads at Baba-Eski.
(4.) Cover afforded by the rolling country in rear.
(5.) Presence of timber.
(6.) General healthiness of soil, a great portion of the position being on gravel.

Disadvantages:—

(1.) Length of line 13 or 14 miles.
(2.) Absence of salient points thereon.
(3.) Undue steepness of the hill line to the N.E. of Baba-Eski.
(4.) Interruption to lateral and rear communication, consequent on the number of small water-courses described in reports.
(5.) Necessity of detaching a force to the left bank of the Ergine.
(6.) Alleged scarcity of water in dry weather.

Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total.			
	116	49½	.. ..	Lule Burgas to Wisa.
				22nd January.—The route leaving the town by the "Ahmed Beie" valley, turns sharply to right, and gently ascends left side of valley, becomes at once a series of wheel tracks, over loam, very heavy and bad. Four Chiftliks seen to left in valley 200, 600 yards, 1½, 2 miles off respectively.
		50	.. ..	Track rises to top of ridge (over cultivation, no trees). Crosses streamlet, and passes 200 yards to left of large Chiftlik (wood and stone), 6 houses and many out-buildings attached. A few trees. Large herd of buffalo seen.
		50½	.. ..	
		50¾	.. ..	Cultivation gradually ceases, and track passes over open rolling country, flat ridges and broad valleys. Gravel appears in patches, and wheel tracks become less heavy. Gradients easy, except descent to small streamlet crossed by temporary wooden bridge. Fountain.
		51½	.. ..	Cultivation becomes general. Track runs gently down to broad valley; crosses streamlet; low marshy banks. Small wooden bridge.
6½	122½	51½	Sankai ..	Enter Sankai (Bulgarian), 120 houses, wood and mud. Track ascends steeply (½). Fountain. Gravel becomes general; cultivation gradually disappears, and track passes into open down country, covered with sparse low scrub; crosses two streamlets; banks lined with thick scrub; by sharp ascents and descents.
		52	.. ..	
		52¼	.. ..	Passes to right (½ mile) of large Chiftlik. Stone wall enclosing 4 or 5 houses. Cultivation on loam. A few trees and thick scrub to left of it.
		52¾	.. ..	Track, very heavy and swampy, crosses streamlet,

Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total.			
		*		and descending to centre of broad flat valley, 0·6 to the Sandschak Déré, low banks, reeds and willows, swift current, 20 feet across; runs along the stream for 300 yards, then crosses it (*ford*). A few trees in vicinity.
6½	159	53	Ahmédlel ..	Enters *Ahmedlel* (Bulgarian), 160 houses; church, stone; rest, wood and mud. Ground in valley (said to be) fertile; crops, wheat and barley.
				Track, rising over left side of valley, again gets on to gravel, leaves cultivation behind, passes over gently undulating down country.
3	162	54	Tartaly ..	Situated in a roll of downs, on gravel. A few isolated stunted trees. 30 mud houses (Bulgarian). Streamlet, low flat banks. Leaving Tartaly the track (*all defined but fairly hard*) ascends very gently a long low valley, or roll in the downs; 1½ miles from village, it enters thick, low scrub (thorn and oak).
6	168	55½	Thorptu-keui	Cultivation re-appears and track enters.
				Thorptu-Keui (Greek); 40 houses, wood and mud. Situated at head of valley up which track ascends, and down which streamlet runs. A few large trees in village. A well. Quitting village, track mounts scrub, slowly descends for about 4 miles, when reaching ridge of downs, it descends sharply and suddenly (¼) into broad open valley from the other side of which rise the hills forming the range of the "Little Balkans."
3	171	56½	.. ..	Reaching bottom of valley, track passes marshy piece of ground, intersected by streamlets, crossed by two roughly made wooden bridges (small spans, bad repair), small wood available for this purpose ½ mile to left.
				Tchiribusch-keui seen on spur of downs 1½ miles to left.
		57¼	.. ..	Track crosses valley; apparently under cultivation. Snow prevented investigation of character of route, and nature of produce of soil. Valley studded with detached trees of fair size.
2	173	57½	*Wisa* ..	Track, after intersection of several small mountain streams, borders a patch of marshy land, crosses this by a raised paved causeway, and reaches Wisa. Situated on a high projecting spur, with almost precipitous descent towards main valley. Top of spur crowned by an old castle (in ruins); deep ravine, mountain stream to north-east; houses extend to north side of this, and also into valley on south-east side of the spur, where the slope of the ground is more gentle. 600 houses (wooden, stone basements). Population, 2,000 (1,000 Greeks, rest Jews and Turks). Can furnish 700 oxen and buffalo, 100 waggons, 1,000 sheep and goats, 100 horses. Produce, 10,000 okes wheat, 4,000 barley, 7,000 Indian corn. Water supply (from springs) said to be abundant, and of good quality. No communication with other towns by metalled roads. Country track (said to be very bad, and difficult for passage of waggons in winter) to *Kirk-Killissi* and *Saray*. Telegraphic communication with *Kirk-Killissi* and *Hadji*.
				24th January. *West* to *Midia*.
				The track leaving the town commences to ascend easily, passing on to a soft rocky formation for the extent of a quarter of a mile; then steeply ascending over a broad, insecure mass of ground, turns to the right (meeting telegraph line to Midia, I went and skirts almost an abrupt line of cliffs. Cultivation and fruit trees in valley to right.
		58	.. ..	Arriving at foot of chalk, leaves latter and strikes up the spur (track 31 defined, rugged and steep (½).
		58½	.. ..	Arriving at top, it winds through rock and scrub, sometimes on easy level gradients, sometimes very

* Forming a little further down the valley the "Ana Déré." A branch of the Bejaskeui Déré.

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Distances in Miles: Intermediate	Distances in Miles: Total	Total time in hours.	Name of Place.	Remarks.
				sharply over short rocky rises; track itself narrow, 5 to 8 feet, and uneven.
		58¾	.. ..	Reaches top of ascent. Commences to descend, running through a valley where trees (oak) begin to mix with scrub, developing eventually into a small wood or copse (oak, ash, hazel, &c., all small size). Track narrow and difficult.
		59		
		59¼		Rises on to a descending ridge, whose course it follows for a quarter of a mile.* Ground open, and track wider and apparently smoother. Descends gently into broad low valley, down which a small streamlet runs. Follows course of latter at distance 100 to 200 yards from left bank. High scrub, small trees (oak, hazel, &c.), and thickets.
		59¾	.. ..	Fountain on right side of streamlet.
		60	.. ..	Crossing steeply crest of hill, track (rough, broken, and narrow) descends abruptly, closing on a ravine on left, along a cutting† in side of which descent is continued into a broad and flat valley running N.W. and S.E. Stream runs down centre of this valley. Low banks costed with willows 50 ft. broad at foot; 1 ft. to 2 ft. deep. Crossed also by wooden trestle bridge, in very bad repair; plenty of trees in valley for mending it. Valley said to be under cultivation—wheat and barley.
3	18½	60¾	Pineke ..	Crossing stream, route enters village of Pineke (Greek). 100 houses, chiefly wooden. Small streamlet runs through village. Track thence rises very steeply, through sparse low scrub, over rough stony hillside: thence up right side of an almost precipitous ravine,‡ reaching top of hillside, track (very narrow, rocky, and difficult) skirts along sides of rounded spurs, at easy gradients, reaching culminating point of ascent in one hour from Pineke. Descent towards Black Sea commences. Track (uneven and very narrow) passes along broad descending spurs, at very gentle gradients, through thick oak scrub.
		61¼	.. ..	
		63	.. ..	Skirts left of wood of fair-sized oak and ash, suitable for spars.
				N.B.—The following is from information and from what could be seen after sunset. See note.§
				The main track, narrow and rough, continues to descend gently through thick scrub but along broad ridges for an hour, or more; then steeply descends into a flat valley along which a stream (shallow and easy to cross) runs, follows the course of this for half a mile, then crosses a ridge by a rather steep ascent and descent, and in less than an hour (without snow and in ordinary weather) enters the valley of the Tchagas Dereh.
				This valley is flat and broad, with almost precipitously steep sides, coated with scrub, which developes into wood and thicket near the stream; latter has low banks, shallow water, soft bottom, and is liable to flood; width very variable, as also current. Track follows course of this river, occasionally crossing it, till within half an hour of Midia, when it rises steeply over right side of valley into a broad open ridge, across which it descends to Midia.
				In ordinary weather—
				Wisa to Midia takes 7 hours
				Pineke „ „ 4 „
				My journey occupied 13 hours.

* About this time snow began to deepen, rendering it impossible to minutely inspect the nature of track.
† Track easily blocked at this point by filling in the cutting. Trees plentiful.
‡ Very good place to destroy the track.
§ From about this point the traces of a track become more and more indistinct; but, as the guide continued to follow the course of the telegraph, no remark was made, he having been three times told to keep to the main route. His finding, however, that the scrub was becoming thicker, and drifts deeper, a halt was called and guide questioned. The latter confessed that he was off the line and simply, in consequence of the snow, following the telegraph. The main route, in consequence of increasing depth of snow, was not reached till sunset.

Distances in Miles: Intermediate	Distances in Miles: Total	Total time in hours.	Name of Place.	Remarks.
12	193	70¼	Midia ..	Situated on a broad promontory, terminating in cliffs along the sea front. On each side of the promontory there are strips of sandy beach, forming the mouths of the flat valleys down which the Urgas and Tahpas flows run.
				There are the remains of a Roman wall built across the neck of land thus formed. Six to ten fathoms of water can be got close to the land, but I am told no ships touch or anchor here on account of the exposure of the coast to the prevalent N.E. wind.
				Selvi Bournou (two miles to the north) offers a certain amount of protection from northerly winds, and I am told there is deep water close under its cliffs. 320 houses (wood, stone foundations, and mud). Population, Christian and Turk, 1,600. 10 dependent villages. Can furnish 150 pairs of oxen and buffaloes, 2,000 (or, including villages, 10,000) sheep and goats, 20 horses, many heads of swine among the mountains. Annual product of grain very small—wheat, barley, and Indian corn, 15,000 kilos, includes quantity grown in dependent villages.
				The greatest trade of the place is in charcoal (3,000,000 okes per annum). This is exported along the sea front by small craft that can ground on the sandy beaches referred to, and *in summer only*, on account of the difficulties of route to the interior by arabas.
				Water-supply, four fountains (said to dry up in summer) and the two streams before referred to.
				There are no roads, properly speaking, but in summer arabas can traverse tracks to the *Wisa* (two days for an araba), *Simaktova*, and *Saraj*. The latter track is said to be the best into the interior, and might possibly be traversed by an araba in winter.
				Telegraphic communication with Constantinople and Burgos, two wires; Wisa, one wire.
				In its present state the track from Midia to Wisa is impracticable for artillery, except mountain batteries; it, however, is capable of so much improvement by simple pioneering work that in dry weather an army could probably cross the hills over it with artillery and train. Water is said to exist along the route, even in summer.
				The scrub is so thick that trees cut and drawn across the track would form excellent impediments. It could also easily be destroyed in the ascent and descent to Pineke.
193	193	70½	Midia ..	*10th January.—Midia to Asko* (Poliam).
				There is no araba track between these places. A bridle track (said to exist) which follows the coast closely. This, however, was choked with snow, and could not be examined. Deep snow prevented nature of soil, over which the route lay, being examined, or the character of the track being seen. The times given are those actually taken, but in ordinary weather Midia to Chelengos takes only 5 hours: Chelengos to Asko, 2 hours.
				The route leaving Midia, descends very steeply into valley of the Tahsas (called also "Kasan") Déré; crosses this by ford (60 feet wide, 2 feet deep, gravel bottom, low banks) to right of dam and water mill, with a few trees, not dry in summer; follows this stream round base of a spur, running down to it; then turns to left, follows up the course of a tributary streamlet, gradually ascending valley, through small trees and thick scrub; crossing the head of valley, through wood of small oak, route descends rapidly to the Kasrilki Déré (15 feet wide, 2 feet deep, swift current); banks, low, and lined with small trees
		71¼	.. ..	

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Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total.			
				Footing this, route rises through wood (oak, ash and hazel) to top of ridge, running down which, through thinner scrub and (apparently) heather, it descends precipitously to small streamlet, ascends equally steeply, crosses a narrow ridge, and again descends to mountain stream (the Suhub Déré), 30 feet wide, 2 feet deep at fort; very rapid current; low banks, coated with thickets and scrub.
		75¼	.. ..	Ascends (very steeply) over apparently "cleared" country, crosses ridge, and descending precipitously reaches streamlet (Buk-shuda Déré); very steep ascent and descent to ford, rises through wood of fair sized oak and ash to top of ridge, coated with scrub and small wood (hazel, &c), descends and crosses streamlet, rises again through wood (small oak), crosses *broken* and more open country (sparse scrub and hazel thickets), gradually rising till it meets *telegraph* (2 wires); follows this, gently descending through open country, oak scrub and hazel thickets, reaches an irregular wood of small fir, passes through latter, and descends steeply into broad flat valley; skirts along left side towards the mouth, and reaches farm (stone), surrounded by high stone wall, large out-buildings, grazing farm; herds of sheep and oxen seen. A little barley and corn grown in the valley.
		76½	.. ..	
		78½	.. ..	
11	207	80½	Chelongos-Tchiftlik..	
		81¾	.. ..	*31st January.*—Route crosses the stream running down valley (Bojuk Déré) by ford, 60 feet wide, 2 feet deep (variable), pebbly bottom, low banks, trees above and below ford, runs along right of valley, through trees and thicket (meets telegraph and punctually follows it throughout day), reaches high cliff and sea, turns to right and abruptly ascends (through thick scrub); crosses ridge and adjacent steep valley (thickets and small wood, oak, hazel, &c.); crosses another ridge and descends (passing "fold") to small stream, narrow, high banks, coated with trees; skirts along this towards mouth, crossing it at intervals of ½ mile, turns to right and ascends precipitously; crosses several ridges in this manner, through scrub (juniper, oak and thorn), and small copses of hazel, occasionally meeting wood of larger growth in valleys, till eventually it runs down (through oak wood) into broad wide valley; crosses its stream (Ermen Déré) 45 feet (depth 2 to 3 feet, very variable), pebbly bottom; a few fair sized trees scattered along valley, passes along right bank, large field and cabin seen to left, rises very steeply up right side of valley, skirts along top of ridge (through sparse, juniper and thorn scrub), gently descends into *Asko* (or Vadina). Situated in an open valley (cultivated), ½ mile from sea, where there is an open, sandy beach; 80 houses (one or two stone, rest wooden). Greek. Can furnish 70 oxen and buffalo, 400 sheep and goats, 3 horses, 20 arabas. No cultivation to speak of. Chief industry, charcoal burning; exported in boats. No roads except along sea shore. In summer arabas can (I am told) cross, with difficulty, to Seraj. There is also said to be a track of a similar nature to Ormanly, but being choked with snow, it could not be examined. *Main line of communication with the south* (said to be) *by the shore route.*
		85¼	.. ..	
		81½	.. ..	
8	215	85	Asko ..	Water plentiful throughout the year.
				Asko to Jeni-Keui.
	215	85	Asko ..	*1st February.*—Leaving village track strikes across valley, river 15 feet wide, 1 to 2 feet deep, soft bottom, low banks, destitute of trees, rises up right side of valley in a very broken and undefined manner, steep, and barely passable for wheeled carriages, skirts along top of ridge, through low scrub (*oak, thorn*, and *juniper*). N.B.—The deep snow prevented the nature and limits of the track being examined.

Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total.			
		85¾	.. ..	Descends abruptly into open valley, much broken up by sandhills, studded with clumps of small trees and large scrub, crosses small stream 30 yards wide, shallow, low soft banks, small trees and thick undergrowth on banks to left. Track loses itself among sandhills, across which route passes, reaching sea shore (sand) in a few minutes' time. The route lies along the coast as far as Mandra, only quitting it to pass over two headlands, projecting into the sea. (These are passed 2½ and 4½ hours respectively from time of reaching beach), latter consists of sand (heavy in parts). The coast line composed of rugged broken ground, bare or sparsely coated with scrub, terminating in irregular cliffs (chiefly of sandstone, with occasional outcrops of clay and conglomerate). Numerous small streamlets debouch along the route.
		86¾	.. ..	
		90½	.. ..	After crossing second headland, track follows sea line for half an hour. Cliffs cease, and ground slopes gently towards sea. Then turns inland, and passes gently over uneven slopes coated with scrub; track, over sand, broken and undefined, but passable for arabas—abruptly rises, gains top of ascent—gently descends through high oak scrub towards *Mandra*, small scattered fishing hamlet on "Lake Derkos," six houses (Greek). Situated in a wood of trees of large growth).
		91	.. ..	
11	229	91½	Mandra ..	Track, meeting telegraph (2 wires), turns to left, leaving Mandra 400 yards to right, and skirts along shores of the lake through high oak scrub, interspersed with trees. Shores of lake, low and swampy, at this point, and approach thereto, covered with reeds. Track good (narrow through scrub), over sandy soil, crosses two small streamlets.
		92	.. ..	Emerges from scrub, leaving a thick jungle to right, and "*Pchechanetchik*" *Beacon and Refuge House* 400 yards to left—rises into irregular sandhills, coated here and there with scrub and thickets. These hills occupy the entire area between Lake "Derkos" and "Black Sea," and in places rise to considerable heights (200 to 300 feet above sea level). The track becomes ill-defined throughout its passage across them, but may be said, speaking generally, to skirt the shores of the lake at distances varying from 100 to 400 yards.
5	234	93¼	.. ..	Arrives at the "*Emanetshi Beghne*," or "cut," connecting the lake and sea 30 yards to 60 yards wide, and of considerable depth (9 feet to 12 feet) towards the southern extremity, but choked by sand at the sea outlet; crossed at each extremity by ferries (wooden platforms, working on wire ropes). Sides coated with high scrub and undergrowth, interspersed with a few trees of a fair size.
			Lake Derkos	Water slightly brackish, but quite wholesome; very variable width (500 yards to 3,000 yards); greatest length (from Mandra to Derkos), nine miles; greatest depth, 17 ft.; very irregular in shape, and terminating in long arms, of which the chief are those extending to *Mandra*, *Lozan-keui*, *Belgunis* and *Derkos*.
		94½	.. ..	Track quits sandhills, crossing a small marsh by earthen causeway, and passing streamlet, joins telegraph; tracks branch to "*Yeni-Bournou*". (1 mile). Government Establishment, rocket and lifeboat station, also to Derkos (one mile). 60 houses (Greek); can furnish 15 horses, 40 oxen and buffalo, 60 arabas; annual yield of corn and barley, 4,000 and 2,000 kilos, respectively. Telegraph follows route to this village.
			Derkos ..	Track, skirting a main valley ascends to ridge adjoining sea; a series of wheel tracks, without definite limits, running [illegible]

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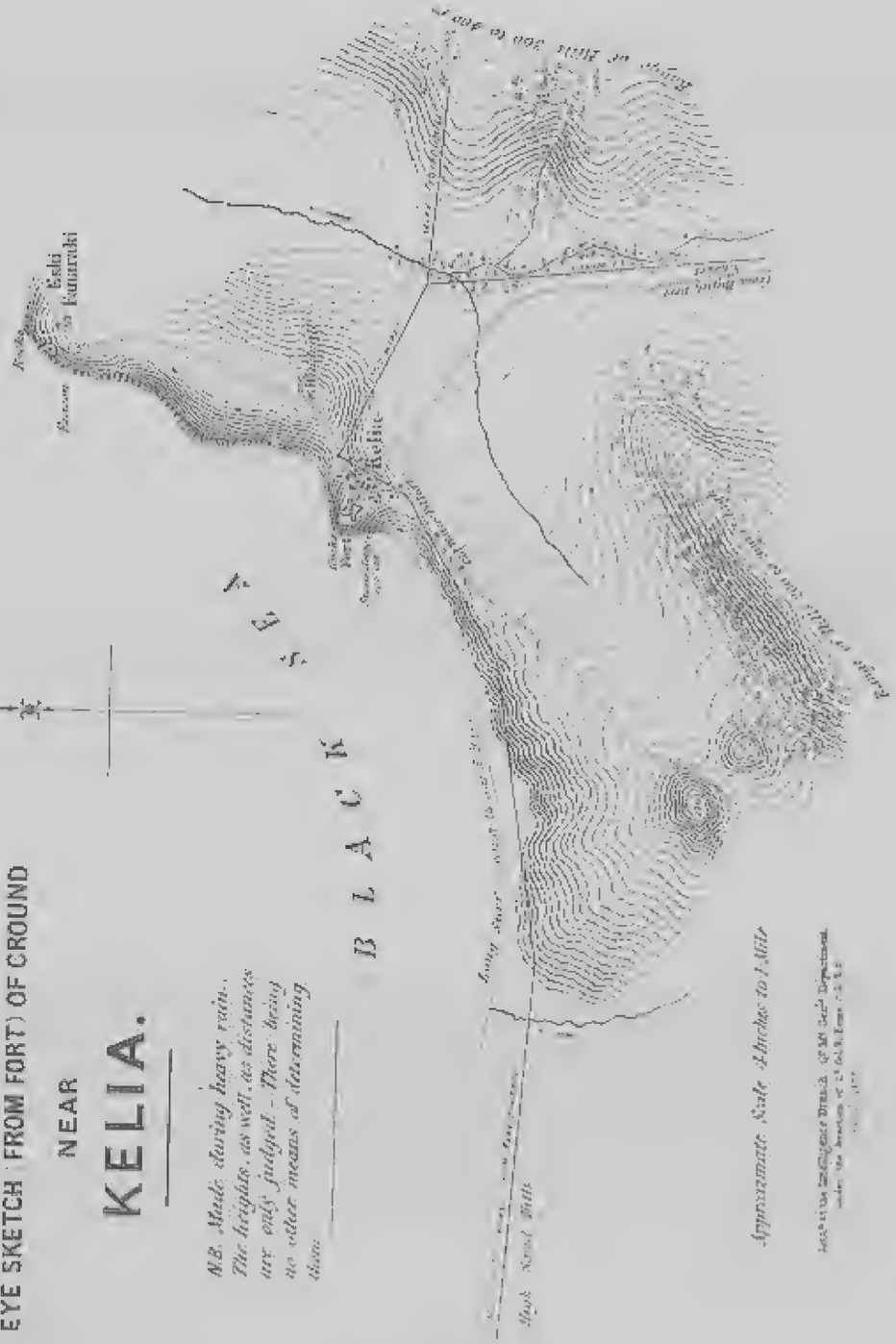
Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate	Total.			
				waste ground coated with low scrub; soil, loam in valleys, sand and gravel on ridges.
		9¼	.. ..	Crosses main ridge and runs parallel to sea (very heavy and difficult to traverse in wet weather), thence gently ascends to the top of ridge and enters *Jeni-keui* (Greek)—65 horses, 30 stone, 35 mud and wood; oxen and buffalo, 26 pairs, 20 arabas, three or four horses; wheat, barley and Indian corn are cultivated, but soil is unproductive; yield for each description, not more than 50 to 100 kilos. per annum. Chief occupation of inhabitants, charcoal burning in the woods to the south of village (outskirts of forest of Belgrad, 200,000 kilos. per annum).
6	240	9½	*Jeni-keui* ..	There is (said to be) *no araba road of any description along coast line, except sea shore.*
				2nd February.—Jeni-keui to *Kelia.*
	240	9½	*Jeni-keui* ..	Track very bad and undefined, leaving villages turns towards sea, running steeply down through pasture, scrub, and sparse cultivation, crosses streamlet, fresh-water spring, and passes on to irregular sandhills, thence to sea shore, crosses mouth of wide shallow stream, on ridge to right of which is situated *Koudous Refuge House and Beacon.* Coast line formed by a mass of irregularly-shaped sandhills, behind which runs a range, thickly coated with scrub; stream debouches from valley; beacon, stream, valley opens out, up which runs track to *Akbounar* (1 mile). Trees seen to mix with scrub on hills to south-west and south.
		9¾	.. ..	
		9¾	.. ..	
2	242	9¾	Koudous ..	
		9¾	.. ..	
2½	244½	9¾	*Akbounar* ..	
		9¾	.. ..	Streamlet, valley opens out to right, across this single line of telegraph seen, running parallel to sea line, and about 300 yards from it.
				Am told this is a military line now in course of construction to Kara-Bournou from Kelia.
..	249½	9¾	Aghatschly	Beacon, refuge house and rocket station, small coast battery, stream debouches, village seen three-quarters of mile up the valley, clay begins to appear; open valley and stream to right, track (said not to be passable for arabas) diverges up valley to Belgrad, through "Tschiftulow," not visible from sea shore.
		9¾	.. ..	
		9¾	.. ..	Coast line steepens into low cliffs, chiefly clay; rocks irregularly coated with sparse scrub; route continuing along shore, crosses mouths of two more streamlets and reaches a high promontory jutting out into sea, and terminating in precipitous cliffs (trap rock formation).
6½	256	10¾	Kulasy ..	Beacon and rocket station, and sea battery on the point (armed with four 6½-in. Krupp guns).
				Eleven or twelve houses on left side of promontory, road across which is extremely bad, very steep, and difficult to cross in wet weather, on account of clayey nature of soil. Route descends again to beach (sand), stream debouches on steep, coast line again formed of sandhills, streams and open valley, mouth formed by sandhills; cultivation seen up the valley.
		10½		
		10½		
2½	258½	10½	Kelia ..	Kelia, situated in the right hand corner of a wide open bay, of which "Kulasy" forms the left shoulder (distant 2½ miles); a square-built fort (masonry), garrisoned by 60 to 70 Turkish soldiers, stands on a projecting cliff (trap rock), about 200 feet above sea level, on land slopes on which are about 25 houses (wood, stone and mud), Turkish. There is telegraphic communication with Constantinople (one wire), and to Odessa, am told, by submarine cable, which lands here. When the military line is completed there will also be communication with the Kara-Bournou and Rumelia. At present the line is unfinished, and no instruments put up. The beach, from Kulasy to Kelia, is all sand (see sketch), but there is a long surf, owing to the number of sand bars that line the coast, making it difficult to land in boats when the wind is



Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total.			
				blowing on shore. There was much difficulty in obtaining any information with regard to the anchorage, as no vessels of any size ever touch here. The bottom (said to be) all sand, and to shelve towards centre of bay, where four fathoms are obtained at about a quarter of a mile distance from shore. Under the cliffs five fathoms can be obtained about from 200 to 300 yards, and two fathoms close to land. The land affords protection from southerly winds, but the coast is entirely exposed to N. and N.W. winds. (*which are said to be the most prevalent, and the cause of many shipwrecks*). The coast between this and Kara-Bournou is strewn with wood, &c., from wrecks, bearing out, therefore, this statement. There is a small stone jetty underneath the Castle cliffs, used by the fishermen for landing their hauls. It is in a very bad state of repair; about three-quarters of a fathom of water is obtained at its extremity. Hard white (? lime) stone for constructing a pier or jetty can be obtained from Jedi-Kunla (one hour).
				Water supply.—There are three old water pillars close to village that appear to have been formerly used to regulate the water supply. They are not in working order at present; in village one fountain (dry in summer); in valley beyond (*see* sketch) stream 15 to 25 feet wide, 1 ft. to 2 ft. deep, current usually sluggish; said not to be entirely dry in summer.
				No woods near; trees near stream, and oak scrub on hills. *Soil*—loam and gravel; place said to be healthy. Araba tracks to Büjuk Déré, three hours; Fanol, 1½ hours.
				Kelia to Constantinople.
	258½	101½	*Kelia* ..	*3rd February.*—Leaving the hamlet, the route (crossing streamlet) descends to main stream of valley, along the left bank of which it runs gently up the valley (joining telegraph, 1 wire). Track, irregular, wide, and bad (chiefly over loam, with occasional outcrop of gravel). Hill sides coated with oak scrub.
		102¼		Passes to right of small cemetery, and two houses; valley opens up to right, crosses streamlet running down latter, and passes water-mill; route lies over grass land and cultivation.
		102½		Track turning to left crosses stream (20 feet wide, 2 feet deep); steep banks covered with thicket, small wood and streamlet to left, sharply ascends right side of valley over arable land, strikes paved road (12 to 15 feet wide) and ascends to Zukri Koui (Turkish); 25 houses (stone and wood), 2 fountains. Route continues to ascend,* passes through a low cutting, sides lined with scrub and a few trees, thence over soft rock, between two steep hills (coated with low scrub), track very rugged and steep.
4	262½	102¾	*Zukri Koui* .	
		103¼		Arrives at summit, track widens, runs along main ridge (over gravel); grass, heather, and sparse scrub for a quarter of a mile. Then, turning to right commences to descend at first very abruptly.
		103½		Fountain; track improves in character and gradient. Descent continues, through slight cuttings and with every variety of gradient, track finally crossing a bed of chalk (very heavy and difficult to cross in wet weather), and enters Janina, a suburb of Büjuk Déré. Lower slopes of hills covered with vineyards and small fruit trees.
3	265½	104¼	Janina ..	Fountain at entrance to Janina.
				Road, passing into town, follows course of a small mountain streamlet to the sea, reaching which it turns to the right,† arriving at a broad metal road, terminated to the left by a strong sea-wall.

* Here track could be easily blocked.

† Joins telegraph, 1 wire.

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Distances in Miles.		Total time in hours.	Name of Place.	Remarks.
Intermediate.	Total			
½	366	104¾	Böjuk Déré	This portion of the town is called Böjuk Déré, and is composed, for the most part, of extremely handsome houses (stone and wood), the summer residences of the rich citizens, &c., of Constantinople. It was impossible, in riding along, to arrive at any just estimate of the number of these villa residences, which are scattered along the sea front and adjacent hills. Probably there are upwards of 1,000 houses in town and its suburbs.
				Still skirting sea, the metalled road quits Böjuk-Déré over a small stone bridge (small stream) and winds along base of precipitously steep bare hills, passes two fountains and a few detached houses, and enters Therapia, a town of same character as Böjuk-Déré—600 to 800 houses, including its environs.
1½	367½	105	Therapia ..	The road passes along sea front of Therapia, at southern end of which it turns inland and rises gently, firstly, through rich cultivation—vineyards and fruit-trees; secondly, through sparse cultivation—wheat, &c.; and finally through bare country, coated with a little scrub, bracken and heather. Arrives at crest of ridge, meeting another road (metalled) from Böjuk-Déré and two lines of telegraph (one with four, the other with one wire). A few trees at junction of roads. From this point the road, over very gentle gradients runs along the main watershed of the line of hills, passing over country destitute of trees, and coated with heather and grass, interspersed here and there with a little low scrub. Patches of cultivation round farms, and various detached houses along the course of the route.
		105¾	.. ..	Fountain and water-pillar. Double line of telegraph
		105¾	.. ..	branches off to the left. Small low wood in valley to right.
		106	.. ..	Large house and farm adjacent to it on left, latter
		106¼		enclosed in high stone wall.
		107	Marsak ..	Farm to right, passing which road enters hamlet of Marsak (12 houses), main road (metalled) joins in from left; large guard-house, scattered houses begin to connect, and route enters suburbs of Constantinople.
		107½	.. ..	
7½	376½	108	.. ..	Pera.

No. 23.

CONSTANTINOPLE,
10th February 1877.

Sir,

Shortly before the departure of Sir Henry Elliot and the Marquis of Salisbury, they both expressed a desire that an officer should be sent to Batoum to report on the state of that place, and what preparations, if any, had been made for its defence. I accordingly detailed Captain Fraser, R.E. for this purpose, and I have the honour to forward his report.

Owing to the many rumours that have been in circulation as to a proposed cession of Batoum to Russia, partly as an indemnity to cover the cost of mobilizing her army, partly as a bribe to keep the peace; it is interesting to find that the Turks appear determined to defend Batoum, and are labouring to construct works for that purpose both on the sea and land sides, and that the garrison of the works consists of 9,000 men, of whom more than one half are regular soldiers.

Sir Linforn Simmons has placed the force requisite for the defence of this place at 2,000 men and Bludm Pasha at 2,500.

The well-known wish of Russia to possess Batoum, the reports that have been in circulation, the unwonted energy displayed by the Turks in strengthening its defences, the large garrison detailed for it, taken

together, appear to indicate that if war breaks out between Turkey and Russia it will be fought chiefly in Asia.

What is going on at Batoum is indeed one only of many reasons that lead to the same conclusion.

The position of Roumania, and the jealousy of the German speaking States, will always form a serious obstacle to the establishment of Russia on the mouth of the Danube—if indeed the hesitation of Russia now is not due to this very cause.

Be this as it may, it is not unlikely that the massing of a large army on the Pruth, with the view of retaining the Turkish forces in Bulgaria may be Russia's line of action in Europe, while at the same time a vigorous campaign is carried out in Asia.

The only European Power that need regard such a course of action with a jealous eye would be England. As regards all the others, what Russia does in Asia, how she extends her frontier, would in all probability be looked upon with as much indifference as the extension of British territory in India.

That the Russians covet Turkish Armenia and the head water of the Euphrates and Tigris as a means of descending those valleys occupying Mesopotamia and establishing themselves on the Persian Gulf, no one who comes in contact with Russians can doubt, and the possession of Batoum would be another stage, and a very considerable one, on the road towards Erzeroum and the possession of Turkish Armenia.

Holding Batoum as a base, the Russians could penetrate, *via* Artwin and Olti, to the Trebizond—Alexandropol road, turn the fortress of Ardahan and Kars, and what is perhaps of greater importance the Soghanly Dagh, the true defence of Erzeroum from the eastward.

The work that the Turks are doing at Batoum thus becomes of great value, but the advantage of spending so much labour on the sea defence is very questionable.

Turkey, at present, has a great naval supremacy in the Black Sea. So long as she has that supremacy Batoum is secure from a naval attack. The moment that naval supremacy passes to Russia, the depth of water close in shore at Batoum will always give iron-clad ships an enormous advantage over works such as the Turks are making, or are likely to make.

The sea defences of Batoum need be only just sufficient to prevent a privateer, or single ship, from attacking the town.

It would appear more desirable to make a good road along the river Chorok, *via* Artwin and Olti, to meet the Kars—Erzeroum road, west of the Soghanly Dagh. Such a road would add more to the defensive power of the frontier than the coast defence of Batoum. The path that at present exists being a rugged bridle path, difficult in many places for a loaded pack horse. The difficulties on this road are so great that the force holding Batoum is frequently isolated from that defending Kars, Ardahan, or the Soghanly Dagh.

I have, &c.,
R. HOME,
Lieut.-Colonel, R.E.

The Inspector-General of Fortifications.

P.S.—I have just seen a pamphlet by Baron Kuhn, late Austrian War Minister, from which I extract the annexed paragraph:—

Extract from BARON KUHN'S Pamphlet.

"In view of such obstacles and the possibility of becoming involved in a war with Central Europe, if she made use of the line of the Danube and Balkan, Russia will in future probably try to satisfy her craving for an open seaboard by operating through Asia."

On this line Russia would come into contact with Turkey as rulers of Asia Minor, Armenia, Mesopotamia, and Syria, with Persia, and at last indirectly with England as holders of the Straits of Ormuz, which connect the Persian Gulf and Indian Ocean."

"On the other hand Europe would be at a distance from the seat of War, Central Europe would not be directly threatened, and it is extremely doubtful whether the latter would consider the indirect, though none the less serious

consequence of Russian advances in Asia of sufficient importance to induce her to make a powerful diversion and engage in a life and death struggle with European Russia for the sake of meeting a distant danger."

"Strong opposition on the part of Europe is not very probable if the aggressive policy of Russia takes this direction, as it is certain that she will not reach the shores of the Persian Gulf in one stride or by means of one great war."

R. H.

Inclosure 1 in No. 23.

REPORT ON THE HARBOUR AND DEFENCES OF BATOUM.

The Chorok River.

Batoum, which lies 30 miles due south of the Russian port of Poti, and at the S.E. extremity of the Black Sea, owes its importance to its being the only secure harbour in the Eastern Black Sea between Kertch and Sinope. Its origin is due to the Chorok River. This stream, rising in the longitude of Trebizond, runs a course of nearly 200 miles before falling into the sea near (about five miles west of) Batoum. The branches, called Medrina and Kakaber, on the English charts, are of no importance, and the main stream enters the sea by that shown south of Kakaber. At the present season, when not in flood, the main channel is about 200 ft. wide, 6 ft. to 8 ft. deep, and with a current of about 4 miles an hour. The stream, within the mountain gorge, is full of rapids, and is with difficulty navigable for the country boats drawing not more than from 6 to 16 inches of water. These descend from Artween, a distance of 40 miles, in eight hours, while it takes two-and-a-half days to haul them up stream along the banks.

Road to Kars.

Some years ago the Turkish Government began (by forced labour) the bridges and other works for a military road from Batoum, along the track which follows the right bank of the river, and thence by Ardanuch to Kars; but the works have fallen into decay, and the project has been abandoned.

Modifications of the Harbour.

In the course of ages the Chorok has formed a delta of 1 to 2 miles wide at the foot of the Ajarah mountains. In the delta, west of Batoum, traces are to be found, in the shape of lagoons, of a harbour similar to that of Batoum, but which has at some remote period been filled up by the sediment from the river. The same process seems in progress in the case of the present harbour. The beach between the Chorok and Batoum is being cut away, as shown by the presence of large tree trunks washed by the sea, while the north point of the Batoum spit has advanced a good deal since the lighthouse was put up in 1845, at which time it stood at the water's edge.

For the present, the extension of the promontory to the north and east is an advantage to the harbour, which, though excellent, is small, and at times suffers from N.N.W. gales; and, owing to the great depth of water which will henceforth have to be filled up to the east of the promontory the process is likely to become slower. The peculiar way in which the harbour has been formed, is the cause of the extremely deep water found close in-shore. Thus, at present, the Turkish first-rate iron-clad "Osmania," is moored by the stern to the land just north of the wooden pier, and not 60 yards from the shore. Indeed, the beach here shelves so rapidly that small steamers could land troops from their bows upon the shingle. Beyond the five-fathom line there are great irregularities of bottom; some of the ridges being so steep that anchors are apt to slide down them and consequently do not hold well. Off the harbour's mouth some of the depths are considerable. Lieutenant Woods, an English naval officer, told me he failed to find bottom with a 200 fathom line while attempting to lay torpedoes off the promontory; and that, in many places, he found extraordinary variations not shown on the charts between Batteries I. and III.

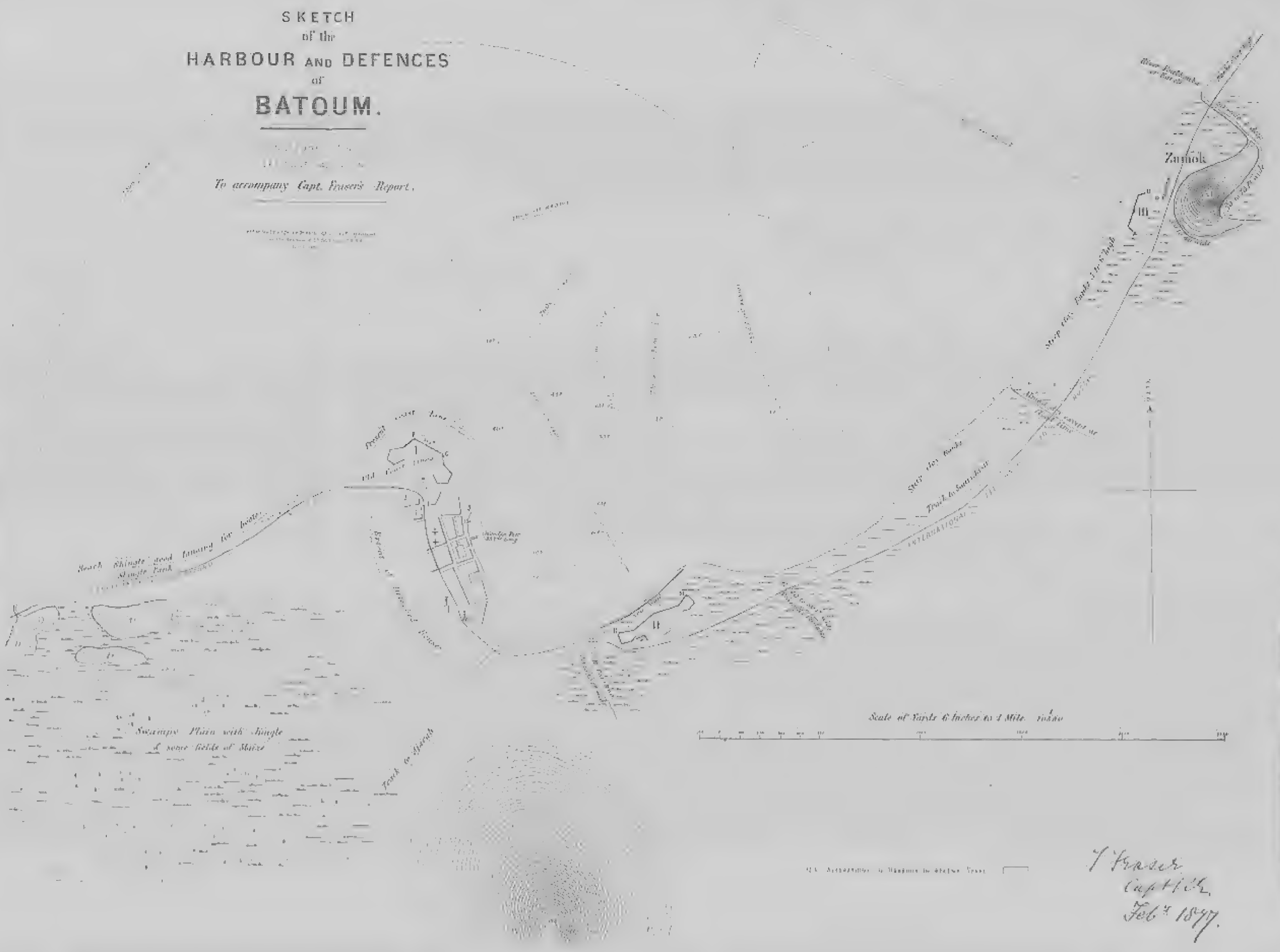
The Town.

The town of Batoum has now increased to 800 houses, and has a population, almost all Turk, of nearly 3,000 people. Many of the houses are at present occupied by the troops, a small number of whom are camped out.

Forces at present on or on the spot for the Defence of Batoum.

In addition to the three iron-clads, viz.:—

The "Osmania," of 16 guns;
The "Avinilla," of 4 guns;
The "Moninezaphir," 4 guns.



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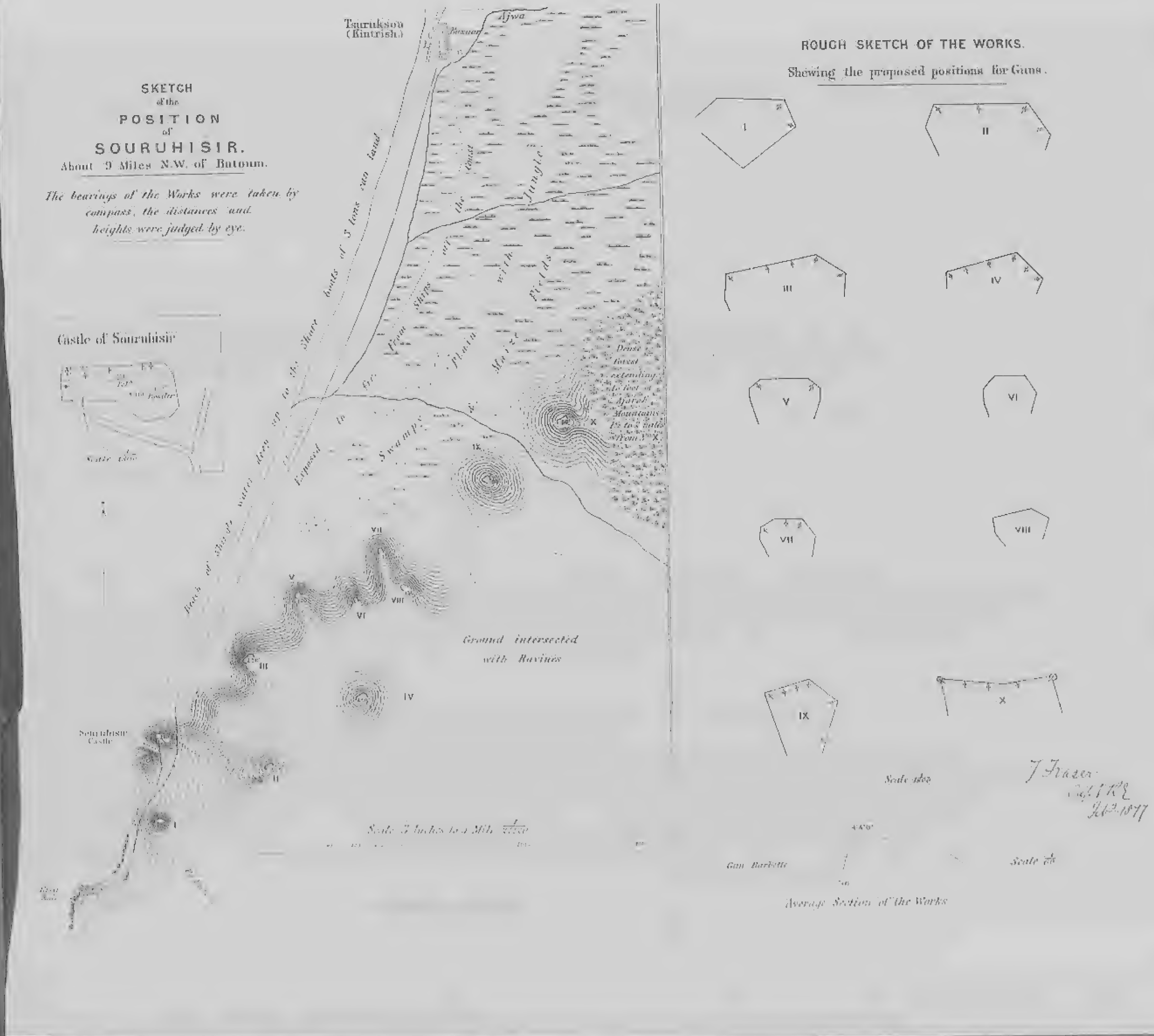
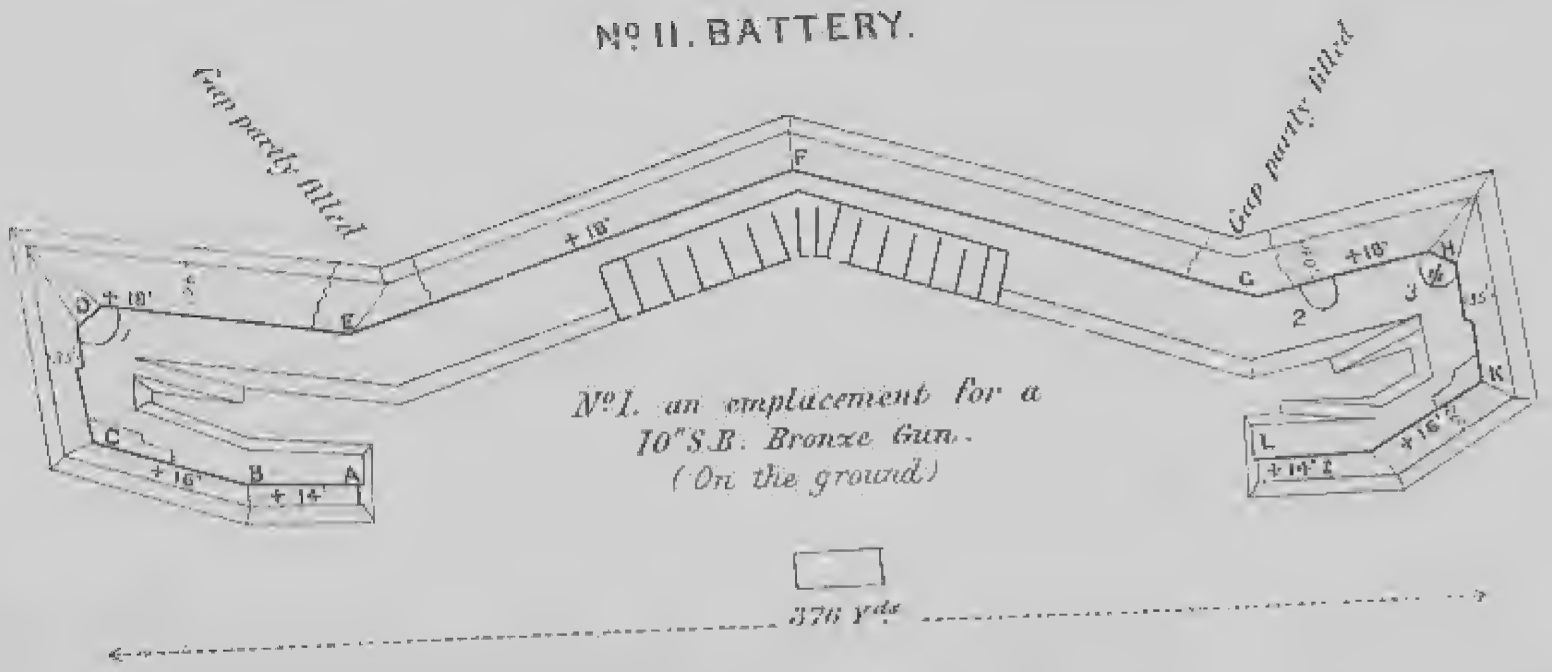
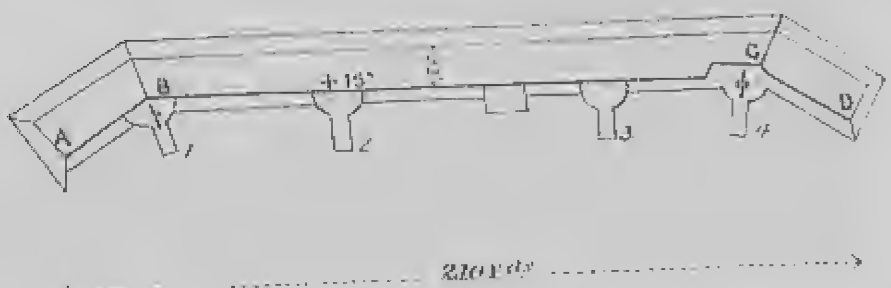

SKETCH
of the
POSITION
of
SOURUHISIR.
About 9 Miles N.W. of Batoum.
The bearings of the Works were taken by compass, the distances and heights were judged by eye.
Castle of Souruhisir
Tsurukson (Kintrish.)
Ajwa
Baxuar
Swamps
Ground intersected with Ravines
Souruhisir Castle
ROUGH SKETCH OF THE WORKS.
Shewing the proposed positions for Guns.
I
II
III
IV
V
VI
VII
VIII
IX
X
Gun Barbette
Average Section of the Works
J. Fraser
Feb. 1877

No II. BATTERY.



No I. an emplacement for a
10" S.B. Bronze Gun.
(On the ground)

No III. BATTERY.



No 1 & 4. 15c. Krupp B.L.R. Guns.
(Now mounted)
No 2 & 3. For 10 in S.B. Bronze Guns.
(One only in the Work on ground)

Lith'd at the Intelligence Department under the direction of Lieut Col Jervois R.E. Deputy Asst Adjt Genl

J Fraser
Capt RE

Armament. on 2.2.1877.

N°	Description
1.5.	15c Bronze B.L.R.
S.H.	15c short B.L.R. Bronze.
S.10.15	12c Steel Krupp B.L.R.
1.12.	10" S.B. Bronze Gun.
7	8in S.B. Cast Iron Gun.
2.6.9.	15c. B.L.R. Krupp.
14	A.10c. B.L.R. Bronze Gun.

N° 1. BATTERY

Scale 1/1800

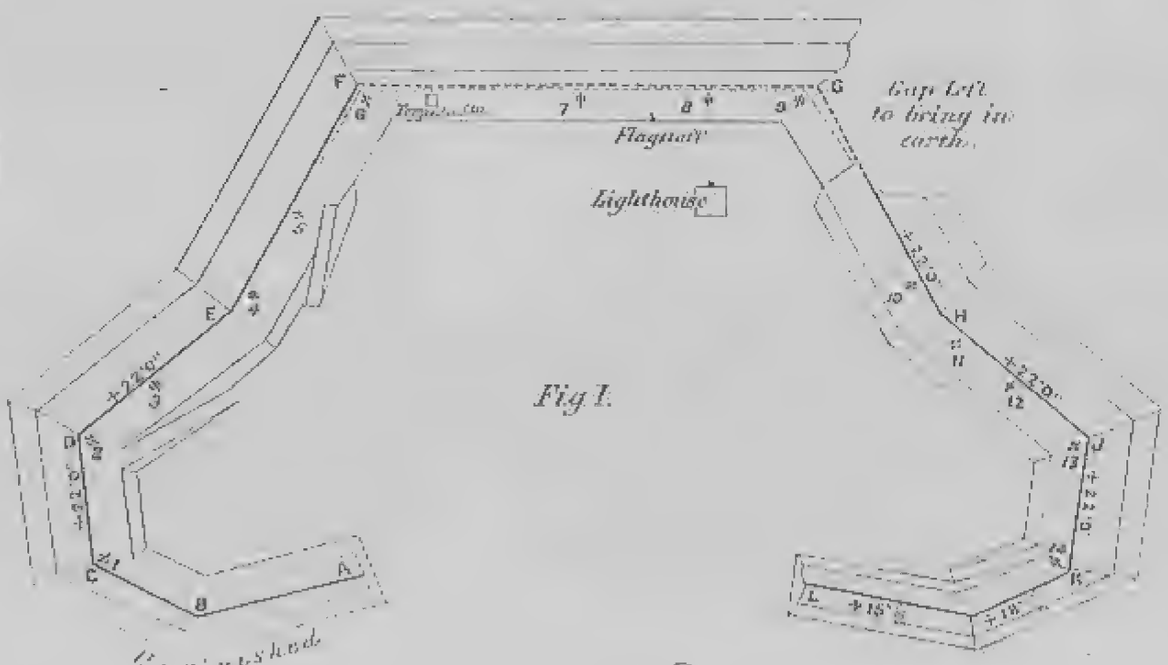


Fig 1.

No ammunition was seen but the supply said to be on the spot was variously stated to be from 100 to 500 rounds per Gun.

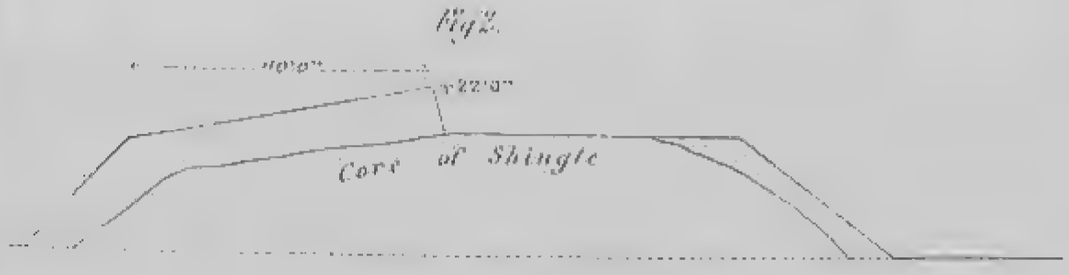


Fig 2.

Section through Face E.E

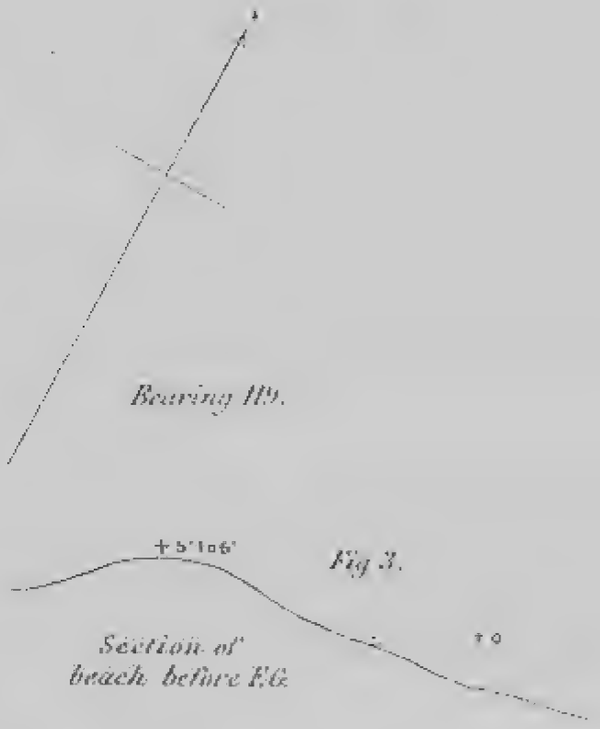


Fig 3.

Section of beach before F.G

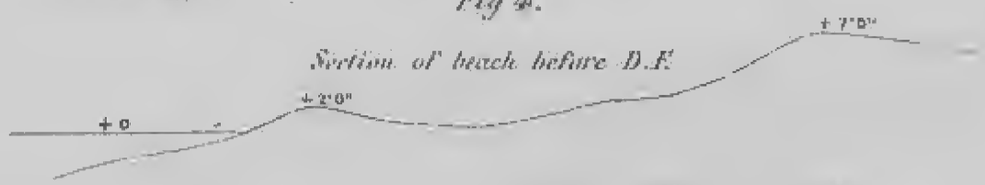


Fig 4.

Section of beach before D.E

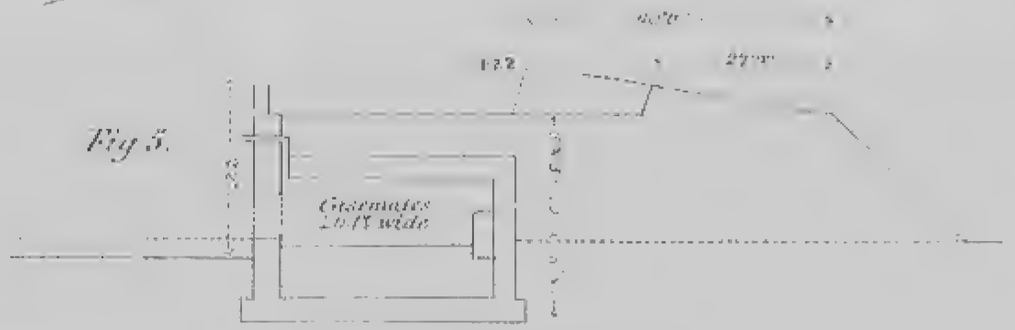


Fig 5.

Section through Face F.G.

J. Fraser Capt RE

There are, under the command of a Field Marshal—

In Batoum—2,500 Infantry of the 1st, 2nd and 3rd Redifs; 200 Garrison Artillery .. .. ..; 2 Field Batteries of 10-pr. B.L.R. Krupp guns, with 184 horses and 300 men .. .. ..; 51—2-pr. S.B. bronze field guns (unhorsed)	Total, 3,000 men.
At Souruhisir (Tsikinzir)—5 battalions of 1st Redifs, two of them of the 4th Regiment .. .. ..; 6—15-pr. B.L.R. (9-c.) Krupp guns (unhorsed) .. ..; 5—12-pr. S.B. bronze field-guns (unhorsed)	Total, 3,800 men.
At Tsuruk Su (Kintrish)—The other two battalions of 4th Regiment	1,500
At the Cholok Guardhouse—A battalion of (Regular) Chasseurs	700

Total, 9,000 men and 28 field guns.

In addition, of the 36 battalions of Redifs which the province of Trebizond has to furnish, it is arranged that 20 go to Batoum and 16 to Erzeroum; and there are three Turkish steamers at present at Platana engaged in the transport of a portion of these, and of ammunition to Batoum. Further, the arming —with Martini-Henry rifles (American pattern)—and organization of 20 battalions of local volunteers, under their own chiefs, has been commenced in Gurgistam.

Naval and Military considerations.

Owing to the great depth of water off the coast, Batoum is exposed to be attacked at close quarters by war ships, while the same cause hinders the laying of torpedoes at any considerable distance from the shore. The place is thus liable to be burned at night through the enterprise of a single cruiser. Again, the whole of the sea beach, from the Chorok to Zamock, and, indeed generally along the coast, is suitable for the landing of troops from shaloups or other large boats; as may be judged from the fact that some that go to Trebizond are often towed by men on the shore. For the moment the Turks command the sea; but to provide against the absence of their ships, three batteries have been made for the defence of the place to seaward. All three are at present open earthworks, without ditches, and exposed to boat attacks, which are favoured by the cover which the beach affords (Pl. I, Figs. 3 and 4). It is proposed to arm No. 1 with 21 guns, of which four are to be 28-c. (11¼-in.) Krupp B.L.R. guns, and to place 12 guns in II., and 12 in III. It was intended to have all the sea-faces 40 feet thick, and with a command of 22 feet; and to construct No. III. with a trace somewhat similar to I.

The present condition of these batteries is indicated in the drawings I. and II.

No. 1 Battery.

No. 1 battery is nearly finished, but the parapet H G, under which are 24 casemates (for a battalion and 250 gunners), is only 27 ft. thick. In consequence of this the guns mounted on it are seen down to their platforms from ships off the harbour. The work is delayed, because the parapet is made of earth which has to be carried in boats from the site of Battery II. and laid over the core of shingle. There are, however, 200 soldiers and 200 civil volunteers at work daily, and the parapet will probably be finished by the end of February, after which the gap has to be filled up.

Casemates.

The entrances to the casemates are in each wing, in each of which there is a magazine with a floor space of 15 ft. by 25 ft., and a large shell filling room outside it. As regards the guns, the 15-c. Krupp guns are what are called "Rink Kanonen" (heavy 64-prs.) They are mounted on iron carriages on high traversing platforms, with hydraulic buffers. The platform works on raised racers, and has an actual pivot in front in addition, on the plan exhibited by Krupp for his 21-c. siege gun at the Vienna Exhibition. The gun fires over a 7-ft. parapet, which secures excellent cover for the detachment.

The bronze B.L.R. guns are of Turkish make; they do not fire the same ammunition as the steel guns of the same calibres. They and the 12-c. Krupp guns are mounted on high siege carriages, firing over 5 ft. 9 in. of parapet, and standing on level platforms. The S.B. guns are mounted on wood dwarf traversing platforms, painted red, with flat racers and a front pivot.

Battery No. II.

In No. II. battery the casemates (intended for 4 companies) are still unroofed, and, as a substitute, 15-in. round logs, to be covered with earth, are being laid over them.

The earth for No. II. and partly for No. I. has been taken from shallow excavations round the former, which renders its site very swampy. To prevent the encroachment of the sea at the bottom of the harbour a low sea wall has been built in front of Battery No. II.

Battery No. III.

No. III. battery has no casemates as yet, only a rough stone building roofed with wood and earth, as a magazine. The parapets are well revetted with sods. The remains of an old castle in rear are to be put in a state of defence, so as to act as a keep to the battery, which is otherwise much exposed to boat attacks.

The whole of these works are entirely without traverses or expense magazines, nor are they enclosed by obstacles. Their present armament cannot be considered as a protection against modern ironclads, though it might beat off unarmoured ships, or even one or two with armour not over 5 in. thick. It is to be noticed that ships could take up a position to the N.W. of No. I. Battery, whence they could engage it unseen from Battery No. II., which would be masked by the town.

The main powder magazines for Batoum are in a hollow of the hill in rear of No. II. The crest of this hill, the most advanced spur of a group of heights coming down from the Ajarah Mountains, is a suitable position for a strong field work, to act as a keep to the batteries and town, whence the defenders could dislodge any boat parties which might succeed in surprising the place.

Attack by Land.

It is notorious that Russia has long wished for Batoum, which she could connect by a branch line with the Poti—Tiflis Railway by merely constructing 3 iron bridges, while the line Poti—Tiflis required 72 such.

As it is, she has spent 4,000,000 francs on the half-finished harbour works of Poti, where, in the end, only 15 ft. or 16 ft. of water will be secured. Russia will, therefore, strive to get the port, during peace by treaty, during war by a land attack, owing to her present naval inferiority. Were Batoum given up, the frontier must be removed to the Chorok from the Cholok River, and this involves a great deal more than the actual loss of the place to the Turks; because the possession of the right bank of the Chorok, with a railway from Russia to Batoum, would secure her an entrance into the heart of the country between Armenia and Anatolia, enabling her, by advancing up the basin, even to threaten the communications between Trebizond and Erzeroum, while southward an advance could be made (very difficult it is true) by Artwin and Tawsagrad on Erzeroum itself; or again, by the track up the Ajarah Su to Kula, possession could be gained of the Ajarah district, which would threaten the rear of Ardahan and Kars.

Directions whence Attack by Land is at present possible.

As matters stand at present, Batoum is exposed to attack from three directions:—

By the Chorok.

First by an advance from Akhizka or from some neighbouring point of the frontier, through Kula, and thence by the valley of the Ajarah Su into that of the Chorok, and by the right bank of the latter into the delta.

By Ajarah.

Secondly, from Kula, by the mountain track, through the village of Ajarah, into Batoum which is distant from Kula about 15 hours.

By Tsuruk Su and Sourulisir.

Thirdly, by an advance across the Cholok, through Tsuruk Su (Kintrish) and Sourulisir (Tsikinzir) along the North Coast track.

The Chorok Defences.

To provide against an attack by the Chorok Valley (a very unlikely contingency) some small works are *to be* made, and a detachment posted at the point where the Chorok emerges from the mountains; and further (as well as against a march through Kula-Ajarah to Batoum), a defile on the road, 18 hours from Batoum, is being fortified, and will be defended by a battalion of infantry and two battalions of local volunteers. The Kula-Ajarah track is, however, so bad that horses, it is said, cannot be ridden along it.

The Ajarah Defences.

The North Coast Road Defences.

With a view to defence in this direction, which is by far the most exposed to danger, the coast road, in the first place, is being repaired in earnest. At present it takes four hours to ride to Surubisir, which, in a straight line, is only nine miles from Batoum. The track, on leaving Batoum, crosses the two streams, right and left of Battery No. II., on pile bridges of five and seven small piers. It passes the stream at Zamok by a ford, but preparations are being made here also for a pile bridge.

Between Batoum and Surubisir the last heights of the Ajarah plateau approach within two or three miles of the sea, and between them and it the space is filled up with low hills, generally wooded with beech, and with a thick undergrowth of arbutus, laurel, and creepers. These hills throw spurs down to the seashore, which form defiles easily barricaded and held.

Between the spurs are flat shallow valleys, growing maize and rice. The track, following the coast, meets the first of these spurs just beyond Zamok; and here a cutting in the rock has been made 12 ft. to 15 ft. wide. At 1¼ hours from Batoum the track crosses two watercourses, and then reaches Kinlik Point, where the beach is barred. The track (the first of two to the right) here turns a little inland, and rising rapidly about 90 feet, passes in rear of and rejoins the shore some 600 yards further on. This is the worst portion at present for the passage of guns, and would require to be corduroyed along parts of the southern, and widened along parts of the northern ramps; for the former, timber is at hand; the latter would be easy. At two hours from Batoum the Chakir hamlet and river are passed; the latter by a ford (or in flood time by a wooden bridge for men and horses an hour further up stream). The river has here three branches, about 40, 60, and 70 feet wide, and is generally fordable. From the river the track passes through rice fields on a causeway, and crossing a stream, rejoins the coast at a fishing village; beyond this, thick woods come down to within 50 yards of the sea. At 2½ hours from Batoum, and 600 or 700 yards short of Ilisir Kale (Tsikinzir Point), the road and telegraph, which so far accompanies the road along the coast, both turn inland, because the promontory bars the beach, though men can pass in rear of it by a stair-like track leading into the next bay. From the point where the road turns inland, a good deal of labour has been spent in cutting out the track, which is, however, quite unmetalled, but can easily be corduroyed, as it passes through dense and high woods, which conceal it also from the sea, from which it recedes a mile at the most inland point. The track rises to perhaps a height of 450 feet, and then descends to the old castle of Surubisir, through a defile, which leads into the plain of the Cholok.

Between this Georgian Castle and the foot of the Ajarah Mountains the defile is perhaps 3 miles wide. This space is filled with a confused group of low hills, the highest not much over 500 ft. This hilly ground, which is generally wooded, ends along a line N.W. from Surubisir Castle in a series of spurs descending to the plain. Along these the Turks are preparing a defensible position, with its left secured by the repaired castle on the sea, and with its right resting on the forest at the foot of the Ajarah Mountains. Between these points they have made 10 small earthworks on the crests of the heights. (Pl. III.) These are generally open at the gorge, and are still unarmed, but are intended for from 35 to 40 guns. At the pass itself the works are arranged in double line, and No. IV. acts as a keep for, and sees into Nos. III., V., VI., VII., and VIII. Communication between the works is of necessity difficult, owing to the deep and narrow ravines which separate the heights, but good tracks to each of the works have been already cut out, and are being improved, and the timber and undergrowth are being rapidly cleared away.

The Surubisir position

In the castle are six 15-pr. B.L.R. Krupp guns, five mounted and looking north, and a sixth to be placed along side them; and also a 12-pr. S.B. bronze field gun looking west. This work forbids any attempt to pass round under its left, while the fortified heights completely command and look down upon the more or less open plain of the Cholok, across which an attack would have to advance, unless, which is thought impossible, it succeeded in forcing its way through the forest country on the right of the position. As a further precau-

tion in this direction, the chief of the staff (Mustafa Pasha) informed me it was intended to make some additional defences to the right of No. X., and to entrust the defence of the forest to 4 battalions of natives, who know the woods, and are, by all accounts, very hostile to Russia. It is intended also to bridge the stream (60 ft. wide, and now 1 ft. to 3 ft. deep) between Nos. IX. and X. On the whole, the position is undoubtedly strong, though the security of the right is hardly assured. It has the great advantage of providing any amount of timber fit for abatis, &c., of which however no use has, as yet, been made for purposes of defence. The 8 battalions at present at the front can doubtless hold the position against any sudden attempt, and bearing in mind the support that war ships can give the left, and their action on the line of advance, it is thought that a force of from 9,000 to 12,000 men, with 35 to 40 guns, could continue to hold it against almost any odds.

Several of the battalions have had the experience of the Servian campaign. They are encamped in small camps in rear of the works they are employed on; the tents, each containing 10 men, are slightly sunk into the ground, and have good clay fireplaces for burning wood, which has lessened the sufferings of the men during the recent snow.

The supplies are most easily got by the sea from Batoum, particularly as there is an almost total want of arabas and but few pack horses in the country; but the road is practicable for pack animals, and will soon be so for wheeled traffic. Beyond the position no defences have been made, and the frontier guard house and the old stone block house at Tsuruk Su are of no importance. From Tsuruk Su, it should be mentioned, a road leads to the Russian Military Depôt of Ozoogeth, about 19 miles distant, and to the south-east two passes, each over 6,000 feet high (and difficult), lead over the Rolowa and Perenga Daghs, into the Ajarah district; but a detour through either, on to Batoum seems quite out of the question.

Tsuruk Su and Frontier.

The frontier stream, the Cholok, is about 100 to 120 feet wide, and is fordable in summer. There is a bridge across at the guard house. The Turkish videttes report a force of about 4,000 men on the Russian side.

The Cholok.

T. FRASER, *Captain R.E.*

Black Sea, 7. 2. 77.

Lieut.-Colonel Home, C.B.

Inclosure 2 in No. 23.

MEMORANDUM ON THE DEFENSIVE TORPEDO ARRANGEMENTS AT BATOUM.

In the month of January 1877, the Turkish Government employed an English naval officer, the chief of the Naval College at Constantinople, to lay torpedoes off Batoum Harbour.

Accordingly, 8 mines have been laid, at depths below the surface of about 36 feet; to be fired (by observation) by electricity from a station in No. 1 Battery, where one of the Silvertown observing sectors is placed.

There are also observing stations (alignments of poles) at batteries Nos. II. and III., which are connected with No. 1 by earth cables.

The wash of the surf at the promontory had, in a week or 10 days, completely bared the protecting wires of the cable, and appeared to be wearing out the wires themselves.

In addition to the observation mines, there is one electro-contact mine and several intended to explode by the shock of contact only. These are in cast-iron cases with an air chamber and are floated a few feet below the surface. They have a detonating fuze which explodes somewhat on the principle of an ordinary *detonating* shell fuze. The fuzes are now screwed to "safety," so that at present the torpedoes are harmless.

The charges consist of several (2 or 3) of 1,000 lbs. of pebble powder, the remainder are 50 lb charges of dry guncotton.

Owing to the depth of water, the torpedoes had to be laid somewhat close in to shore; that is, not more than 300 to 500 yards out to the N. and N.E. of the promontory, there are also some on the shoal in front of Batteries II. and III. The firing batteries are Leclanche's; the fuzes, platinum wire.

The arrangements for the mines to be exploded by observation are such as to allow of the firing of only a single mine at a time.

At Poti, torpedoes have been laid down as well as at Batoum, and, owing to the shallowness of the water, it was here possible to place them at a more suitable distance.

Torpedoes at Poti.

The Turkish officials said they knew the positions of these torpedoes; and they have had an offer from a ship captain of the neighbourhood to take them all up for 10*l.* each.

At Batoum, the closing of the harbour at night time is an element of considerable danger for vessels obliged to run to that port under stress of weather.

It may be mentioned that the ships of the Russian Company have lately been fitted with iron sockets to allow of the rigging out of some description of offensive torpedo with which they are furnished.

Russian Steam Navigation Company.

The Russian Government have arranged to employ these vessels in wartime.

Lieut.-Colonel Home, C.B.

T. FRASER.
7. 2. 77.

Inclosure 3 in No. 23.

MEMORANDUM ON TREBIZOND AND SOME OF THE MINOR PORTS OF THE SOUTHERN BLACK SEA.

Trebizond owes its importance to its being the port whence runs the only fair road to Erzeroum and Kars from the Black Sea; for which reason it has lately been largely used by the Government for the disembarkation of siege and field guns and ammunition for the above fortresses.*

Trebizond.

Since the beginning of August last, the following guns have passed through Trebizond to the interior, viz:—

64 Siege guns.
111 B.L.R. field guns.
45 Mortars.

Of these 27 field and 2 15-c. short B.L.R. guns (on siege carriages) all of Krupp steel, were starting on the 6th of February for Erzeroum; a fact that shows that, even with snow on the ground, the Turks can use the pass for moving heavy artillery into the interior. They had, however, taken the precaution of sending in 1,200 infantry soldiers; who were to march before the guns and remove snow and other obstacles. They had also sent over from Erzeroum 250 artillery horses for the guns.

The distance to Erzeroum is about 150 miles, and the courier rides it in 48 hours.

Trebizond itself has about 8,000 houses, and perhaps 40,000 inhabitants. It is divided into three portions by two rocky ravines, which run perpendicularly to the coast. The central portion is the site of the Byzantine Castle, which had its walls on the edges of the ravines; and even now forms a strong keep to the town. The old harbour was at the front of, and enclosed by, these fortifications. From Platana, 9 miles W. of Trebizond, to the town itself, are 7 small batteries, all armed with a few antiquated S.B. guns, with the exception of that on the promontory, where stands the lighthouse. Here, at an elevation of about 60 feet above the sea, 4—15-c. B.L.R. Krupp guns are mounted, and could beat off single unarmoured ships. Trebizond, however, like all the ports of the Southern Black Sea is always liable to be burnt at night, even by single ships, which could run in to within 1,500 yards of the place. The platform on which Trebizond stands is entirely commanded by a rocky hill of, say 900 feet in height, immediately in rear of the town. This height also commands the valley through which the great road Erzeroum—Trebizond reaches the sea at the latter place.

The Pasha at Trebizond mentioned, that it was intended to place torpedoes off the town; but the shape of the harbour is far from being favourable to

* Lighters are used between the ships and a wooden pier, 100 feet long, in the east bay of Trebizond.

their use. He further stated, that the seafaring population of Anatolia, could muster 2,000 shaloups (small vessels of from 5 to 20 tons), and proposed to make piratical descents, with them, on the Russian coasts. The population itself, both at Trebizond and all along the coast, seems to be animated with no little enthusiam for war with Russia. The only instance to the contrary that was heard of, was the desertion of 500 men out of two battalions, each of 700 men, on the night before they embarked at Kerasunde for Batoum. The anchorage of Platana, owing to the form of the mountains in its rear, and because it is a little more protected, is generally used in preference to Trebizond, when the wind enters the latter, as the landing on the beach is then often impossible and always difficult there.

Kerasunde. The small port of Kerasunde is about the only one along the line which is completely protected from the E., being on the W. side of a small promontory about 300 feet high.

The town consists of about 1,500 houses, and there are the ruins of an old Genoese castle on the hill.

The water in this harbour is fairly deep in shore.

Ordu. The small port of Ordu has about 1,000 houses; it is indifferently protected from the W., and open from the N.W. right round to the E.

Samsoun. Samsoun is another port, similar in the general lay of its harbour to that of Ordu, but somewhat better protected; the water, however, is much more shoal.

The town has, perhaps, 2,000 houses and 14,000 inhabitants.

Sinope. This is the best port in the Southern Black Sea, it is only exposed to the S.E., and is practically quite secure. The harbour is protected by a headland 400 or 500 feet high, running E. and W. and connected with the main land, at its western extremity, by a low spit of land on which stands the modern town. The 5-fathom line comes close in shore.

The Turks, it is stated, are now improving the defences on the promontory; none of these were, however, visible.

Inebeli. This little port is exposed from W. northward to E. It contains 400 to 500 houses, lying in the mouth of a great ravine, running inland from the coast.

Eregli. In the hills behind the port of Eregli coal is abundant, and was, at one time, much worked.

T. FRASER,
7. 2. 77.

Lieut.-Colonel Home, C.B.

No. 24.

CONSTANTINOPLE,
11*th February* 1877.

Sir,

In completion of the plans forwarded with my letter, No. 8, I have the honour to forward plans of the ground to be occupied by the main depôt at Makra-keui on a scale of 8 inches to a mile, and plans of the ground to be occupied by the divisional depôts at Hadem-keui and Jaserin on a scale of 12 inches to a mile.

Plans of the environs of Constantinople are nearly completed, and will be brought to England.

I have the honour to be,
Sir,
Your most obedient servant,
R. HOME.
Lieutenant-Colonel, R.E.

The Inspector-General of Fortifications.

No. 25.

CONSTANTINOPLE,
11*th February* 1877.

Sir,

In accordance with the instructions received by telegram directing that the officers now employed under my orders in the East should return to England, I have the honour to inform you—

1. That Captain Ardagh will reach Alexandria to-morrow the 12th. I

have telegraphed to the British Consul, and requested him to direct Captain Ardagh to return to London without delay.

2. Captain Fraser (who has just returned from Batoum), Captain Grover and Lieutenant Cockburn leave for England on the 13th and 14th.

3. Lieutenant Chermside has not yet returned from Rumelia, but as he passed Adrianople on the 3rd, his return cannot be long delayed. On his arrival the three horses he has with him will be sold, and I shall immediately return to London, *vid* Varna and Lemberg.

4. Colonel Lennox has selected Lieutenant Chermside to remain with him, and that officer will consequently not leave Constantinople.

5. A considerable number of additional reports will be furnished to you on my return to England, on many points connected with the instructions I received prior to leaving England.

I have the honour to be,
Sir,
Your most obedient servant,
R. HOME.
Lieutenant-Colonel, R.E.

The Inspector-General of Fortifications,
Horse Guards, War Office.

No. 26.

Sir,

LONDON,
10*th March* 1877.

On receipt of your orders to return to England with the officers under my command, I considered it desirable that the fortresses of Pravadi, Varna, Schumla, and Rustchuk should be examined, and that the officers should return by the roads which an Austrian army, if it attempted to debouch from Transylvania into Wallachia, would follow.

I therefore endavoured to obtain authority from the Turkish Government to inspect the fortresses above referred to. This, however, was refused, and as one of the telegrams sent to me contained an order not to examine anything more in Turkey, Her Majesty's Chargé d'Affaires did not feel himself justified in urging the Turkish Government to grant permission for the inspection of these fortresses.

Feeling, however, that as private individuals, the officers under my command could not be debarred from using their eyes on their homeward journey, I instructed them to endeavour, unostentatiously and quietly, to obtain what information they could.

I have the honour to forward herewith a report on the Fortress of Schumla, prepared by Lieutenant Hare. This report contains as much information as Lieutenant Hare, during a two days' stay at Schumla, could procure, and I hope that it may be found satisfactory. From all that I could learn and see in Bulgaria the Turkish war preparations are much overrated, and are by no means of the importance that some newspaper writers appear to attach to them.

I have the honour to be,
Sir,
Your most obedient servant,
R. HOME, *Lieut-Colonel, R.E.*

The Inspector-General of Fortifications,
Horse Guards.

Inclosure in No. 26.

SCHUMLA, OR SCHUMNA.

The town of Schumla is situated at the foot of an elevated plateau. This plateau surrounds the basin or hollow in which the town is built on the north, south, and west; the eastern extremities of the two hills projecting from the plateau and surrounding the town on the north and south, lying in a line nearly due north and south. An imaginary line thus drawn would very nearly enclose the town on the east.

The level of this plateau, the slopes and summit of which are covered with a short stunted brushwood, is about 600 feet above the surrounding country; the slopes facing the north, south, and east are exceedingly steep and abrupt; those immediately above the town so much so as to be hardly accessible. From the edge of the plateau, which is a perfect kind of tableland, the town can be seen into as looking on a plan.

The country immediately to the east of the plateau of Schumla is formed of a series of slight ridges, which, starting from the plateau, run first in an easterly and afterwards in a southerly direction. (The western slopes of the plateau are much more gradual than the eastern.)*

The plateau of Schumla does not itself form any part of the Balkan ridge, but is distinctly divided from the Kutchuk Balkan, or lesser Balkan, by the valley of the Akylli Kamtchyk (or tame Kamtchyk); another tributary of this river, or the Deli Kamtchyk (or wild) dividing the lesser Balkan from the main Balkan ridge which ends at Cape Emino.

The plateau under which Schumla is built is entirely distinct from the Balkans, forming by itself an independent watershed between the tributaries of the tame Kamtchyk and those of the Danube, some of these rising within a very short distance of each other in a comparatively slightly hilly country to the west of the Schumla plateau.

Schumla, then, as a fortress, does not, technically, *block* any of the Balkan passes, access to any of which being quite possible without passing under the guns of the place, but as an entrenched camp or fortress capable of containing a large force, Schumla, by its position, with reference to the Balkan passes and the lines of communication of an army attempting to advance on Constantinople from Bulgaria, and not having the command of the sea, would have to be as firmly secured by that army before the Balkans were crossed as was Metz in the war of 1870–71, before the advance on Paris was made after the battle of Gravelotte.

Three roads may be said to meet at Schumla, viz.:—

1. The road from Varna and Pravadi.†
2. The Silistria road.
3. The road from Karnabad, *viâ* Dolrol, Tchallikavak, Eskistamboul, and Tchengel.

Of these, perhaps, the two former only are worthy of the name of "road" out of Turkey; the Varna and Pravadi road as far as the village of Caspedjan is by far the best, but even on this road, in the winter, it is in many places preferable to quit the road and drive or ride in the plough alongside.

Both roads have been regularly constructed and metalled, but have been allowed, like most works in Turkey, to fall to ruin by sheer neglect; on reaching the old field-work *enceinte* which was thrown up in the war of 1828, the Silistria road on entering the town disappears in a slough of deep mud (through which, however, I saw araba carts dragged by oxen, though nearly axle-deep in the loamy clay). The Varna road likewise, on entering the town, becomes exceedingly bad, being nothing more than a rough street of large stones and covered with a layer of deep mire, such as is generally seen in Turkish towns.

Besides the above, there are several tracks leading from the town on the west and ascending the steep slopes of the hill; most of these are mere woodcutters' paths, but they generally lead on the summit to two araba tracts, leading to the villages of Kotesh and Dormushkai.

The Balkan road *viâ* Eski Stamboul, is a fair "araba" track as far as this place, but is afterwards very bad (from what I was able to ascertain in Schumla).

Schumla can only be said to be partially fortified at present, being practically open on the south and west as far as works are concerned, but the Turks put their faith on their probable enemy being unable to attack from any direction but the east, and have devoted what little energy they have hitherto shown in fortifying the place to strengthening the eastern side.

In the war of 1828–9 the town was surrounded by an earthen parapet and ditch, traces of which still exist in a tolerably good state of preservation in many places. It may, however, be now left out of the question, as having no military

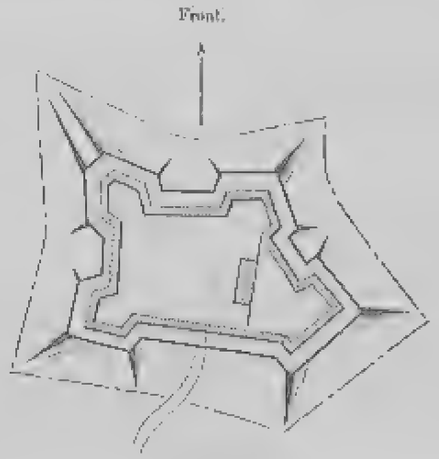
* This is from information, and not from personal observation.

† This road is called the "Schumla Road" station road at Schumla; "Schumla Road" being the English name for Caspedjan.

value whatever. In addition to the above, the town was surrounded by an outer line of detached works, which succeeded in keeping the Russians at a respectable distance for those days.* Of these, the four permanent works still exist in a very fair state of preservation, viz.:—

1. Ildus-Tabia, or Fortress of the Star (so called from its elevated position).
2. Tchalli-Tabia.
3. Ousoun-Tabia (or the Far off Fort).
4. Tchengel-Tabia (lying close under the foot of the hill).

These works are constructed on a kind of bastioned trace, and have revetted scarps and counterscarps, the latter follow the indentations of the former, the ditches



Tchengel-Tabia.

being thus imperfectly flanked. There is a certain amount of casemated cover in Tchalli and Ousoun.

Roughly speaking, the parapets appear to have a command of about 8 or 10 feet, the ditches a depth of 8 to 12 feet, and a breadth of about 25 feet. The cordon of the scarps is well covered. The interior slopes of the parapets are in many places revetted with stone, and at Tchengel are in a ruinous condition.

(A considerable amount of stone has been lately accumulated outside the latter work, apparently with the object of executing repairs, but I saw no work going on.)

Putting aside the question of the hill in the rear, and the town being so near (within about 300 or 400 yards), the positions of these works are well chosen. They are on a ridge with a good natural glacis in front, and in the days of smooth-bored ordnance were very respectable works.

They are, however, now-a-days, with the exception of Ildus-Tabia, much too near the town. This fact has been recognised by the Turks themselves (or rather by Bluhm Pasha, a German, their chief engineer), and a new line of works has been projected considerably in advance of these, which may, therefore, be looked upon as acting as an interior line or partial *enceinte* to the town.

The ground chosen on the east for the new works is that formed by the ridges previously described. Of these works, however, only one has been as yet constructed, —viz., Besh-Tépé-Tabia, or Fortress of the Five Hills, on the ridge between the Téké Dérésé and Straja brooks. Another work has been commenced on the ridge between the Straja and Bokludja-Dérésé, near the village of Kasablar, but of this work the ditches only have been partially excavated.

The positions of these works are admirably chosen. The form or shape of the ridges, which here run in a north and south direction, are in every way adapted for defence; the slopes towards the east are even, gentle, open, and form a long

* Three of these, Ildus, Tchalli, Ousoun, and Tchengel, have since then been made into permanent works. All the works were field works in 1828–9.

natural glacis, whereas those towards the west are much more abrupt. The country is perfectly open and well commanded by the positions chosen.

Besh-Tépé may be said to be completed, though there is still some work going on at the parapets (see Appendix). The work at Kasablar was commenced some years ago, but very soon afterwards, like so many Turkish undertakings, was suddenly stopped for some reason or other.

An infantry battalion has lately been sent to work at the excavations, but owing to the terrible state of the ground this winter, but little has been done. The men, indeed, can ill be spared from the drill-ground, they are encamped in a sea of mud, and I am informed suffer much from sickness. They are nearly all Asiatics and do not believe in the work they are employed at.

The distance between Kasablar and Besh-Tépé is, roughly, 7,000 yards.

Between Besh-Tépé and Ildus-Tabia there is a very long gap of over 9,000 yards. Nothing has been, as yet, done between these two works, although there is an excellent position for a work about 1,000 yards or 1,500 yards to the east of where the Silistria road crosses the ridge of Besh-Tépé. There are the traces of an old earthen redoubt on the west side of and close to this road. But putting aside the value of the work itself, it is too near Ildus-Tabia, and is, moreover, too much situated on the reverse of the ridge to be of much use. It is directly seen into by Ildus-Tabia, and might be useful as an outwork belonging to this fort.

Besh-Tépé is a very formidable work of modern construction, and built according to the latest German principles. The Turks are very proud of this work, and believe implicitly that it fully protects Schumla. It is armed with Krupp guns, but there appear to be none of these guns in the other works, as far as I could see or ascertain.

I can give no details of Ildus-Tabia. It is a permanent work of irregular

Ildus-Tabia.

shape, cut off towards the plateau by a parapet and ditch, but having the faces towards the steep slopes scarped with masonry. The position is strong and imposing, but the ground on the side of the plateau falls slightly towards the work.

From this work, round by the west, to Tchengel-Tabia, Schumla is perfectly open towards the plateau. There are, it is true, the remains of some earthworks which were formerly thrown up either in 1828–9 or 1854, but of these there now

remain only some mounds of earth. On the south of the town and immediately over Tchengel-Tabia there are the remains of what must have been a very considerable irregular shaped field-work, constructed close to the edge of the plateau. Close to this there are three newly constructed unprotected powder magazines, where the Turks removed the powder from the magazine in the town on the outbreak of the Bulgarian insurrection.

In former wars the Turks deemed it necessary to fortify the edge of this plateau against the west. They apparently ignore this now, and consider the approach of an enemy from this side as impossible. I cannot give any information on the practicability of the western slopes and roads of the Schumla plateau, but can state that I saw arabas and pack-horses coming into Schumla from the hill laden with firewood. In the war of 1828 Schumla was supplied *via* this plateau, the Russians never being able to enclose the town on this side, but this was evidently from their small numbers, and not so much from the nature of the ground. Again, in the event of hostilities the garrison of Schumla will most likely have to expect the advance of the enemy from the Rustchuk direction more than from Pravadi and Varna. Nothing but the extraordinary infatuation which seems to act on the Turks as a spell can account, I think, for neglecting to fortify the edge of the plateau towards the west. Surely if it was necessary before, and the remains of the field forts testify to this, why not now?

Schumla contains several large military buildings—viz., four large blocks of barracks for men, two large blocks of stables, a new military hospital, an old factory where gun carriages were once made, a large field-gun shed, a large Governor's house, and an old powder magazine.

From all the enquiries I could make, I could not find any stores suitable for holding any large supplies.

There are two steam flour mills in the town, one belonging to the Turkish Government, which broke down soon after it commenced work, and another belonging to my informant, a Bulgarian proprietor and farmer, who is compelled to supply flour to the garrison. The whole amount of grain, however, scarcely suffices for the daily consumption of the troops, and nothing appears to be laid by. My informant, who is a large dealer in grain, would undoubtedly have known were any supplies being purchased or requisitioned for storing purposes.

The troops are at present living on a system of requisition. The system, or rather the absence of any system, is one by which the troops starve and the people are unfairly plundered. For instance, a sheep is required from each house, whether the owners have sheep or not. This is settled by the Zaptiehs, on the spot, carrying out the requisition, and after each person managing the transaction has had his share of the plunder, the troops get what remains.

The Bulgarian inhabitants do not complain of the conduct of the Turkish soldiers themselves. There are some 5,000 billeted on the inhabitants, chiefly on the Christians, and on these they live by begging or stealing.

The rice ration, so dearly prized by the Asiatic Turk, has lapsed, and a ration of wheat or barley is issued instead. This the men make into a kind of mess or porridge. A meat ration is now and then issued, generally very lean mutton. With all this, and the fact that there are 16 months arrears of pay due to the troops, that the whole town, camp, and garrison is buried in deep mud, that there is much dysentery and typhus, and that the men, being mostly Asiatics, feel the cold keenly, there appears to be no discontent, but on the contrary, an excellent spirit among the men and complete confidence in the issue of the coming fight.

The Infantry are all armed with brand new Martini-Henry rifles and the old-fashioned triangular bayonet. They all have great coats with hoods, knapsacks, tin water flasks, and a tinned copper dish to every five or six men*, and are fairly clothed and shod, though not with much uniformity.

The troops at present at Schumla are nearly all Infantry of newly raised, though by no means very young men. The Artillery and Cavalry, with the exception of a few men of the former, have all been sent to the Danube.

There are two batteries of the old pattern 6-pr. Krupp field guns (German measurement in the Artillery barracks, but in such a dirty state as to render it impossible to say what colour the carriages were painted, and a great number of large gabions have lately been made in the Infantry barracks.

* The Mahommedan soldier does not require a mess tin.

There is no military wheeled transport whatever in the place, not even an ambulance, and the sick are carried on their comrades' backs to the hospitals. There are a few miserable Bulgarian ponies used as pack animals to carry the ration grain about, but no horses, either artillery or cavalry. In addition to the large new military hospital, which is full, one of the newly constructed blocks has been converted into a hospital. As far as I could ascertain, there are about a couple of surgeons in the place, but these Asiatic soldiers do not believe in medical science, and require but little attendance.

There is a considerable camp near Besh Tépé fort, the tents appear to be new and of much the same pattern as those used in our service. Some of the higher officers have green tents. The camping ground is a sea of mud.

There is a considerable amount of drilling going on, from the goose step to the brigading of several battalions. The Infantry drill is founded on and is a close copy of the old French drill. The battalions were in eight companies of 22, 23, and 24 files, the drill is of the wildest description, and accompanied with much shouting and waving of swords. The bugles were generally employed in playing a sort of discordant French *fanfare* to which the men paid not the slightest attention but marched about the muddy ground with a long slouching step. I was informed that neither men nor officers believe that European drill is essential to fighting.

It is very hard to estimate the strength of the garrison, accounts are so conflicting that I hardly believe the Turks know themselves how many men they have. As far as I was able to judge, the number of battalions lay between 16 and 18, and the number of men between 7,000 and 8,000, but as troops are constantly being sent to the front from Schumla, it may almost be looked upon as a halting place between Varna and the Danube.

The Turks are at present devoting what energy they have to the fortresses of the Danube, where large amounts of war matériel are being forwarded by rail, but no war matériel on any scale has been brought to Schumla since the Krupp guns, with which Besh-Tépé is now armed, were brought from Schumla Road Station (Kaspedjan). The state of this road would testify to any such heavy traffic having passed over it lately.

Should Schumla be blockaded or besieged, starvation will be one of the besiegers' weapons. The inhabitants have nothing. Last year's crops were a failure, then came the insurrection, and the quartering of a large force living from hand to mouth on the country ever since; there is nothing to be found in the surrounding country in the shape of grain, no stores or magazines have been created in the place, and, though the Christians are pretty sure to be expelled from the town (if a worse fate does not await them) on the approach of the enemy, they will leave nothing behind them in the shape of food, and nothing will be got from the miserably poor Mussulman portion of the inhabitants; in fact they will have to be fed by the Turkish authorities.

The Turks look upon the defence of Schumla as secondary to that of the fortresses of the Danube; this most likely is founded on their confidence in the coming struggle, but I was informed that they estimated the probable number of the garrison in case of hostilities at 40,000 men!

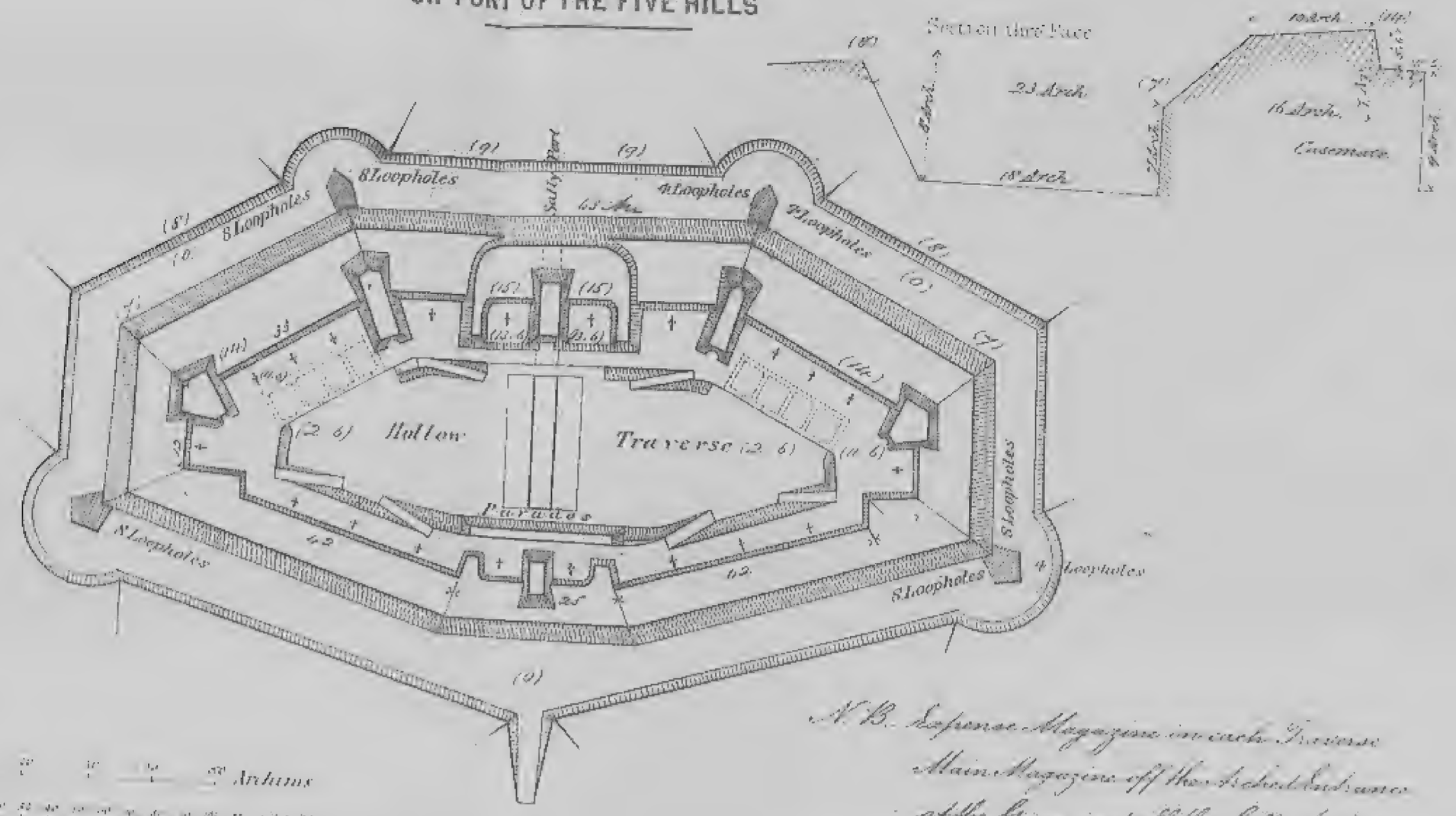
W. A. H. HARE, *Lieutenant, R.E.*

10. 3. 77.

ROUGH SKETCH
OF
SHUMLA

Scale 1" to a mile

ROUGH SKETCH
OF
FORT BESH-TÉPÉ
OR FORT OF THE FIVE HILLS



Archims

English Feet

The Dimensions Levels &c. are in Turkish Archines.

N.B. Expense Magazine in each Traverse
Main Magazine off the Arched Entrance
at the Gorge and off the Sally Port passage
under the Front Face.
The Ramps are very steep.
The Entrance in the Gorge is at the level of
the Ditch.

Lith. at the Intelligence Branch Qr. Mr. Genl. Department
Under the Direction of Lt. Col. R. Home C.B. & Q.M.G.

Tchengel Tabia
Old Redoubt
Old Redoubt
Old Redoubt

THE BALKANS.

Lith^d at the Intelligence Branch Q^r Mr Genl Department
under the direction of Lt Col^l B Hume C.B. A.Q.M.G.
1877

APPENDIX A.

Itinerary of Roads near Schumla.

(From inquiries at Schumla.)

No. 1.

	Hours.	Quality.
Schumla	—	Good.
Tchongel	½	Do.
Telibekui	not known	Do.
Eski-Stamboul	3	Do.
Dermenkui	Not known	Do.
Verbitza	12	Bad.
Kotel	17	Do.
Shernowa	20	Very bad.
Sliven	22	Bad.

No. 2.

	Hours.	Quality.
Schumla	—	
Eskis-Dchumaa	Not known	
(*Via* Kadikui)	Do.	Good.
Osmanbazar	Do.	
Kotel	Do.	
Sliven	Do.	Bad.

No. 3.

	Hours.	Quality.
Schumla	—	
Eski-Stamboul	3	Good.
(*Via* Tchengel)	—	
Dragoi	5	Bad.
Smedowa	7	Do.
Tchallikavak	10	
Dobrol	Not known	Very bad.
Karnabad	—	Very bad.

N.B.—Doubtful whether arabas could go from Tchallikavak to Dobrol. My informants could give me no information on the Silistria and Varna routes beyond that the roads were generally good for this country, but on the other hand some of them had travelled by the Shipka Pass and gave me the following:—

	Hours.	Quality.
Rustchuk	—	
Turnow	12	Good.
Gabrowa	Not known	
Shipka	Do.	Horse track.
Kusalyk	Do.	Good.

N.B.—The Silistria and Rasgrad roads meet at the village of Kadikui, about 5 miles north of Schumla

It will be seen that these routes do not agree with the maps of the country (Kiepert and the Austrian General Staff maps), but my informants had themselves travelled by these routes, and were confident that the "araba" traffic was carried on through the villages, &c., above given.

W. A. H. HARE, *Lieutenant, R.E.*

No. 27.

LONDON,
19th March 1877.

Sir,

I HAVE the honour to transmit a report on the railway from Varna to Rustchuk. Viewing the importance of this railway as connecting Pravadi, Varna, and Schumla, it is a matter of regret that the Turkish Government did not make it on the southern bank of Lake Devna. Had this been done it would have been far more secure than at present, and an uninterrupted railway communication might have been insured at all times between Schumla and the sea.

As it is, the railway is decidedly open to attack. The marshes through which it passes are at this season under water, but they bear evidence of having many practicable araba tracks through them, and in summer, when alone it is submitted an attack is to be dreaded, the maintenance of railway communication between Schumla and the sea at Varna will be difficult if not impossible.

Undoubtedly the best place for destroying the railway is just outside the Skeytandjik Station. I was informed by the Turkish Engineer officer at Rustchuk that the Turks had made preparations for destroying this viaduct; but I confess I am sceptical as to any such preparation having been made. It is worthy of note, that there are several places on the line where large quantities of sleepers and rails are stored. Should any of these fall into the hands of the Russians there would be little difficulty in repairing the line.

The workshops of the railway are on rather an extensive scale, and are situated at Rustchuk, outside not only the old works or *enceinte* of the place, but also outside the new advanced line of forts partially constructed. They may be destroyed from the northern bank of the Danube.

Should an invasion of Turkey be attempted there can be little doubt but that the force thrown across the Danube, at or near Galatz, will attempt to seize the railway at or near Rasgrad. The railway here runs through a gently undulating country, and offers every facility to an attacker to seize it, and so cut the communication between Varna and Rustchuk.

I have the honour to be,
Sir,
Your most obedient servant
R. HOME,
Lieutenant-Colonel, R.E.

The Inspector-General of Fortifications,
War Office.

Inclosure in No. 27.

DESCRIPTION OF RAILWAY FROM VARNA TO RUSTCHUK, BY COLONEL HOME, C.B. R.E.

Distance from Rustchuk, in Kilometres.	Description of Railway.	General Remarks.
224	4 ft. 8½ ins. gauge. On the level, runs between Lake Devna and the town. Numerous sidings close to the pier. Space to make many more.	Varna Bay, a small inlet, deep water, well sheltered, except from north-east to south-east. Good holding ground. Railway runs out on timber pier, with 10 ft. of water, and a good steam crane on it. Beach sandy and good; well adapted for landing troops.
223	Varna railway station, close to north shore of Lake Devna; numerous sidings. Station buildings not extensive.	Close under a fort, on which men are now engaged.
216	Masonry culvert	White chalky, or marly soil.
215½	Small cutting, about 8 ft. deep ..	Ground on north of railway dry, and open, and suitable for camping.
215	Cutting in clay, 8 ft. deep.	Lake recedes to about 1,000 yds. from railway, and appears to narrow.
214½	Culvert in masonry	Country rises gently to the north.
214	Cutting dies away.	
213½	.. ..	Lake Devna quite close to the railway, and widens.
213	.. ..	Lake recedes from railway to distance of 800 yds. Marsh between railway and lake.
212	.. ..	Lake approaches quite close, but again rapidly recedes.
211½	Railway crosses an arm of the lake, on a causeway some 600 yds. long.	This arm of Lake Devna apparently of some considerable extent. The main lake recedes from the railway on the south.
209	.. ..	Lake some distance off on the south, with a marshy space covered with reeds between lake and railway. A park-like country on the north. Lake apparently about 150 yds. wide here. The ground rises into stony hills north of the park-like country.
207½	.. ..	Lake widens and approaches railway.
207	.. ..	Lake quite close to railway, and 500 yds. wide. Hills on the north approach the railway, are abrupt and stony.
206½	.. ..	Hills die out.
206	.. ..	Lake close to railway. Small village to the north.
205	Railway here on causeway, with several culverts.	Lake dies out into swamp, with high reeds. River that feeds lake crosses under the railway to north.
201	.. ..	River has fairly firm bank.

Distance from Rustchuk, in Kilometres.	Description of Railway.	General Remarks.
203	.. ..	Cubidjie station. Abrupt stony hills to the north, pointed hills to the south. Country sterile looking. Just beyond station the river widens into a lake, now to the north of the railway, and washes the foot of steep abrupt hills. High ground to south of railway.
202	.. ..	Lake still on right, with a strip of marsh between lake and railway. High ground still to the south.
201	.. ..	Lake 1,000 yds. wide, close to railway on north side.
200	.. ..	Lake recedes. Ground on south lower and wooded.
199	Cutting about 8 ft. deep	Lake terminates. Ground rising, and open on north.
198	.. ..	A large marsh, apparently communicating with the lake on the north.
197	Crosses river on a culvert ..	Marsh.
196½	.. ..	Marsh begins to die out.
196	.. ..	River on south. Both sides marsh.
194½	.. ..	Road on north.
194	.. ..	Large marsh on north.
193	.. ..	Marsh appears to end.
192½	Railway on causeway	A large marsh to the north.
192	.. ..	Marsh terminates. Country slightly wooded on both sides. River to the south, with wooden trestle-bridge over it, and road parallel to railway, which it crosses.
191	A siding, with a large stock of sleepers.	Hills on both sides, with flat park-like country between hills and railway. A bridge over the river to the south.
189	Road crosses railway.	
188	Slight cutting	Hills recede Flat open country.
187	.. ..	Do. do.
186	.. ..	Do. do.
185	.. ..	Do. do.
184	Slight cutting. Road crosses railway.	Hills begin to close on to railway.
183	Road crosses railway	Do. do.
182	Do. do.	Do. Small marsh to south.
181	Slight cutting	Marsh to south. Road parallel to railway on north.
180	Crosses road	Hills approach on north.
179	.. ..	Do.
178½	.. ..	Large fountain on road on north. Marsh on south.

Distance from Rustchuk, in Kilometres.	Description of Railway.	General Remarks.
178	.. ..	Hills close to railway on south.
176	.. ..	Fountain on road, which is still parallel to railway on north.
175	.. ..	Railway in narrow valley. Hills with abrupt and vertical cliffs.
174½	Crosses bridge.	
174	Road crosses railway	Road parallel to railway. Narrow valley cultivated. Hills with high cliffs and broken ground on each side.
172	Passes village or town of Pravadi.	River on north side. Remains of works on
171	Pravadi Station.	hills. Position of great strength; apparently nothing being done to it.
169	Road crosses railway	Valley widens slightly.
168	.. ..	Valley widens considerably.
167	.. ..	Hills close to railway, on south, covered with scrub.
166	.. ..	Do. do.
165	.. ..	Do. do.
164	.. ..	Do. do. Village on right. Hills close in on north; conical-shaped hills. Bridge close to village.
163	.. ..	Railway close to hill above referred to.
162	.. ..	Railway in narrow valley, with road parallel to railway. Hills steep, white stone or clay.
161	.. ..	Do. do. Shape of hills very peculiar, with tops of weathered rock-like old castles.
160	.. ..	Ditto.
159	.. ..	Ditto.
158	.. ..	Ditto.
157	.. ..	Ditto.
156	.. ..	Ditto.
155½	.. ..	Hills very abrupt and steep.
153	Railway crosses stream on bridge.	
149	.. ..	The same kind of hills covered with scrub.
148	Road crosses railway on good stone causeway.	
147	.. ..	Hills recede on the south.
146	.. ..	Extensive marsh on the north. Valley opens out still more.
145	.. ..	Do. do.
144	Railway crosses river by small bridge.	Large pond in marsh. Valley widens very much.
141	Crosses stream by bridge ..	Country open and level on the north. Hills close in on south.

Distance from Rustchuk, in Kilometres.	Description of Railway.	General Remarks.
140	Station, Schumla Road	Great masses of sleepers and rails stored here, as well as telegraph poles. Good well-built houses.
139	Short cutting, 12 ft. deep.	
138	Bridge over a curious crevasse in limestone rock, some 100 ft. wide.	
137	.. ..	Crevasse follows north side of railway and parallel to it. Country wide and open. Road and fountain on north.
134	Culvert.	
133	.. ..	Country gently undulating and open.
132	.. ..	Do. do.
131½	Culvert and road crosses railway.	
131	.. ..	Country broken on north.
130½	Culvert	Country diversified on both sides.
129½	Crosses stream in crevasse. Small cutting, 10 ft. deep.	
129	.. ..	Road on each side of railway.
128½	Bridge over stream.	
127	Ditto.	
126½	Ditto.	
126	Road crosses railway.	The watershed of the country appears to be between 125 and 126.
124½	Ditto.	
124	.. ..	Country open and rolling.
123½	Road crosses railway.	
121	Stone walls built on north side, apparently to prevent railway getting blocked with snow.	Large stone quarry. Some deep ravines in the country parallel to railway.
119	Single line of telegraph crosses railway. Small cutting begins.	Large straggling village on north. Deep crevasses to north; otherwise, country open and rolling.
118	Small cutting ends.	
117	Hedge to keep snow off	Ditto.
113	Skeytandjik Station	Large stores of railway sleepers and matériel. Large viaduct close to station.
112	Cutting, with culvert, just beyond viaduct.	
110		
109	.. ..	Country well cultivated and fertile.
108		
107	Cutting small.	
106	Short deep cutting (clay).	
104	Cutting, 12 ft. deep	Country partly covered with scrub.

Distance from Rustchuk, in Kilometres.	Description of Railway.	General Remarks.
103½	Deep cutting, but short.	
102	Cutting.	
101	Embankment.	
98	Deep cutting.	
96	.. ..	Scrub all over the country.
95	Deep cutting.	
94	.. ..	Open and cultivated, with patches of scrub.
93	.. ..	Do. do.
92	.. ..	Scrub, with small patches of cultivation.
91	Ishiklar Station	Stock of sleepers here. Country covered with scrub.
90	.. ..	Do. with some large trees.
89	.. ..	Do. do.
88	.. ..	Do. with patches of cultivation.
76	.. ..	Park-like country.
70	.. ..	Do.
69	Rasgrad Station	Town of Rasgrad, large, short distance on the north.
68	.. ..	Cultivated, with patches of scrub.
64	Bridge over stream	Two large villages to north.
54	.. ..	Country partly cultivated and partly covered with scrub.
53	Small cutting, 8 ft. deep	Do. do.
39	Small cutting	Large village to north.
38	Road to village crosses railway.	Large quantity of firewood.
37½	Vetova Station	Sleepers and railway matériel here.
32	.. ..	Open country, dotted with trees.
30	.. ..	Open country, with patches of scrub.
29	Cutting, about 15 ft. deep.	
28	.. ..	Well cultivated.
22	Clay cutting, 15 ft. deep.	
21	Railway on embankment. Deep short cutting, 15 ft. deep.	Open country.
20	Cutting, 15 ft. deep.	
19	Road passes under railway. Deep cutting, 20 ft. deep.	Large village to right of line.
18	Tcherrenavodu Station. Cutting, 6 ft. deep.	Country cultivated; with scrub.
17	Cutting, 8 ft. to 10 ft. deep, and embankment.	Do. do.
16	Cutting, 20 ft. deep	Country well cultivated.

Distance from Rustchuk, in Kilometres.	Description of Railway.	General Remarks.
14	Cutting, 8 ft. deep.	
12	Embankment.	
10	Cutting, 10 ft. deep.	Country well cultivated.
9	Cutting, 25 ft. deep.	
8	Cutting, 30 ft. deep	Do. do.
6	Cutting, 15 ft. deep.	
5	Cutting, 8 ft. deep.	
3	Railway workshops	Beautiful plain close to Danube.
1	Rustchuk Station, ...	Close to river.

No. 28.

LONDON,
10th March 1877.

Sir,

In the instruction I had the honour to receive from you prior to leaving London last November, you directed me to consider and report on the best means (should an English army occupy the Buyuk—Derkos line) of controlling, and if requisite, coercing the City of Constantinople. In my reports No. 5 and $\frac{6}{8}$, I ventured to point out the position of Makra-Keui as being well adapted for a store depôt. The defence of this depôt from any possible attack by the Constantinople mob may be here best considered.

So far as the internal police of the city is concerned at such a period (viz., when an English army was holding the Buyuk—Derkos line), I submit it should be left entirely in the hands of the natives, a few able and active police officials from England, Malta, and Gibraltar being attached to it. Such a force as now exists in Constantinople, if regularly paid and handled by intelligent police officers, would, I believe, prevent all chance of an *emeute*. Should such, however, take place it is undoubtedly requisite to consider how the vast population of Constantinople can be controlled.

Should an *emeute* assume such serious proportions as to require aid being given to the native police, such aid, it is submitted, should be afforded by native battalions of regular troops, and not by English troops.

Should the mob, however, attempt to leave the city and attack the store depôt, or threaten the rear of the troops in position at the Buyuk—Derkos lines, it would become requisite to act against them and protect the depôt.

I attach a report and sketch prepared by Lieutenant Hare, R.E., showing the environs of Constantinople.

The sketch embraces that portion of country between the range of hills referred to in my report No. 5, and the city wall of Stamboul, and the outskirts of Pera.

The positions selected by Lieutenant Hare are undoubtedly the best suited for the purpose, but the development is too great to be held by any force that is likely to be available for the purpose.

The maximum force that could fairly be counted on for this purpose might, perhaps, be put at three battalions of infantry, two batteries of artillery, and a cavalry regiment, and the problem resolves itself into the following:—How shall this force be disposed so as to contain the mob of Constantinople, should it become dangerous, until reinforced from the Buyuk—Derkos lines? Constantinople is really divided by the Golden Horn into two great cities—Stamboul the Moslem quarter, and Pera the Christain quarter.

It may be taken for granted that the population dwelling in these two quarters will never be united, at least, so far as to cause them to make or threaten a joint attack on the store depôt, or the troops occupying the Buyuk—Derkos lines.

To keep Constantinople in check, it will be requisite to prevent the antagonistic elements represented by these two populations attacking one another, and also to use the fear which each of the great populations has for the other.

To effect this, complete command must be kept at all times of the Golden Horn and the bridges across it.

Two or three small iron-clad vessels, and a guard posted on each bridge, ready, under the protection of the iron-clads, to open the moveable bay, or sink two or three of the caissons supporting the bridge, will completely effect this object.

By thus isoluting the two quarters, the dangers of an attack by the Moslems on the Christians, or *vice versâ*, is reduced to a minimum, and either may be dealt with separately.

The force already referred to as being detached from the Buyuk—Derkos lines for the protection of the store depôt, should occupy the Great Barrack of Daoud Pasha. If an attack from Stamboul, that is from the Moslem mob, be anticipated, every effort should be made to confine the mob within the ancient Roman wall. From the Sea of Marmora to the Top gate, this wall is a perfect obstacle, and if the gates be closed by a small force with artillery, posted securely on the outside, the object of keeping the mob within the wall would be attained.

As no body of men, especially an undisciplined mob, could debouch through the gates under the fire of artillery.

The main street of Stamboul, indeed the only street that traverses it from west to east, is the continuation of the Adrianople road, which is a fairly wide, good road, from the Silivri Gate to the Principal Bridge a line of tramway runs along this road for its whole length.

In all probability an attempt would be made to debouch by this gate and the opening in the wall where the railway passes out. The occupation of the point B by a battalion and a battery would effectually stop such a movement.

Should the movement be made to the northward of the Top gate, where there are several large breaches in the city wall, and where it by no means is as good an obstacle as to the southward, it would become requisite to hold the Military Hospital and the Ramid Tchiftlik Barrack. A force of two battalions and a battery would be sufficient to keep the mob in check here.

The battery should be placed a little to the north of the Military Hospital, so as to sweep both sides of the Lycus Stream. Holding this position places the water supply of Constantinople in the hands of the troops, and cutting off the water would, perhaps, afford an easy means of bringing the inhabitants of Stamboul to reason, should it be requisite to quell any disturbances.

As regards Pera and Galata, interrupting the communication across the Golden Horn will always protect the Christian from the Moslem population.

It is, however, quite possible that the Christian population might attack the small Moslem quarter of Pera and Galata, or might themselves move out to attack the rear of the Buyuk—Derkos lines and Makra-keui Depôt.

Perhaps the most effectual means of dealing with the Christian mob would be to restore the communication across the Golden Horn and allow the Moslems to neutralise the action of the Christians. It is believed that a threat of allowing the population of Stamboul to cross the Golden Horn would be quite enough to induce the Christian inhabitants of Pera and Galata to remain quiescent.

But should it be considered desirable to take other measures, the deep hollow valley of the Sweet Waters will always afford means of confining the action of the Christian population to the space between that valley and the Bosphorus, and compelling the mob to make a circuit of such an extent as to forbid, practically, any attack on Makra-keui.

Should it, however, be considered desirable to prevent a mob coming out of Pera, the occupation of the old redoubt near the Jewish cemetery, marked R, and the Christian cemetery marked H, with a small force and a few guns, would effectually prevent such action on the part of the mob.

The construction of works at the more important points indicated could always be undertaken under the pretext of forming an inner line as a protection to the city, a little care being taken to design the works to meet the real exigences of the case.

I have the honour to be,
Sir,
Your most obedient Servant,
R. HOME, *Lieut.-Col., R.E.*

The Inspector-General
of Fortifications.

Inclosure in No. 28.

In considering the question of the defence of Constantinople against foreign invasion by fortified positions at some distance from the city, it is by no means improbable that precautions would have to be taken, by a European ally of Turkey undertaking or assisting in such a defence of the city against interference on the part of the inhabitants, &c., of the city itself, composed, as it is, of such mixed and dangerous elements. Were the downfall of the Turkish rule imminent or likely, the fanaticism of the mob of Stamboul might rise to such an extent that a foreign force in the country, even as an ally, might have to defend itself against Mohommedan fury, were suspicions raised in the minds of the Moslems that such an ally might eventually retain possession of a portion of the Turkish empire in Europe.

The first precautions advisable under such circumstances would undoubtedly be measures to confine, if necessary, the inhabitants to the city. The town of Stamboul presents facilities for such a proceeding, being well defined on the land side by the old Byzantine fortifications. On the other hand, Pera, Galata, and the suburb of Ejub would be much more difficult to deal with. Stamboul, on the other hand, is essentially the Moslem quarter, whence most danger is to be apprehended.

Free and uninterrupted communication with the sea would, of course, be essential to the European force in question, which should be independent of the harbour and port of Constantinople. To fulfil this the village of Makra-keui, on the Sea of Marmora, and on the railway from Stamboul to Adrianople, seems in every way suited to form a landing place and depôt. If positions were therefore taken up on the ground outside the city to act defensively against it, the scheme would naturally have to include the protection of the depôt at Makra-keui.

The old Byzantine wall encloses the town of Stamboul from the Golden Horn to the Sea of Marmora, a distance of some six miles. The wall consists of a ditch and a *fausse-braie*, or double wall, flanked by high massive towers. There are seven gates, or exits, in this wall,—viz. :—

1. The gate where the railway passes.
2. Jedi Kulele Kapu.
3. Silivri Kapu.
4. Jeni or Melewi Kapu.
5. Top Kapu.
6. Edreneh Kapu.
7. Egri Kapu.

But the wall is in such a breached and ruinous condition in many places, especially in the part between the Top Kapu and the Golden Horn, that the gates must not be looked upon as the only means of exit. Whole towers have, in some places, fallen down, some bodily, and others split and rent from top to bottom, the fragments generally lying on the ground in huge pieces. The ditch is, in many places, choked with rubbish, and is used as a garden, forming but a slight obstacle now-a-days. A paved road runs the whole way just outside the ditch from sea to sea. This road is in a very dilapidated condition.

The wall may be said to be entirely masked from the outside by one vast succession of cemeteries and gardens, the former predominating throughout its entire length, with the exception of a small portion where the Lycus stream enters the town. These cemeteries, the accumulation of ages, are thickly planted with cypresses, and form a dense wood.

Outside the cemeteries the ground is perfectly open, cultivated, and is a

succession of swelling ridges, with very moderate slopes. The valleys are meadow land and marshy, but the streams are small, even in winter.

The cemeteries, gardens, enclosures, &c., just outside the enceinte, and masking them as above described, would have to be left to the city and to the free use of the inhabitants, partly on account of the impossibility of holding them against the walls, and partly for the reason that it would be highly impolitic to meddle with the Moslem burial grounds in any way.

The first thing that strikes the eye on getting clear of the cemeteries is the huge barracks of Daoud Pasha and Ramid Tchiflyk and the Military Hospital. Whether these were built with a view to overawe the city or not in any way, I cannot say, but they are situated on a most commanding position, and are in every way suited for defensive measures against the walls. The sketches in the Appendix may give some idea of the enormous extent of these buildings. The following are, roughly, the exterior dimensions in the clear :—

Daoud Pasha, 600 yards by 300 yards.
Ramid Tchiflyk, 550 yards by 280 yards.

In front of the former the ground falls somewhat steeply towards the city, and there is a large block of stables and some houses in front.

These buildings, strengthened, if necessary, by field-works at the angles and flanked by artillery placed somewhat to the rear, would stop any offensive movement from the city likely to be attempted on the ground in their immediate vicinity.

It would appear desirable to place a work on the southern extremity of the ridge on which Daoud Pasha is built, as this position is commanding, and flanks the flat valley to the east of Makra-keui right down to the sea, it would be a good position for field guns.

Position B appears to be a favourable one for an entrenchment ; though rather near the town, the gardens towards the city would afford ample abattis. This would be a good point to watch the gates Silivri and Jedi Kuleler, especially as just here the walls are not quite so masked, and the ground falls towards the city. From this work the ground would be commanded down to the sea. Makra-keui in rear as a depôt would be of course put into a state of defence, and would be in rear of and act as a second line of defence, but be independent of the system under discussion. The work B would be an outward or advanced position to A.

The suburb Ejub is built in the hollows and on the slopes of the hills sloping down to the Golden Horn. It is almost entirely built of wood. The slopes of these hills are exceedingly abrupt, and it is not likely that any attack would be made up these, moreover any such attack would be taken in reverse and flanked by the works at C and D.

At C and D it is proposed to place batteries to sweep the Golden Horn and prevent Stamboul from communicating with Pera and Galata. The bridges of boats would of course be removed, and if command of the sea were in the hands of the European force in question (which is of course to be assumed) an iron clad or powerful man-of-war, assisted by steam launches, would with the assistance of these batteries effectually cut off Stamboul from the Pera side.

In the accompanying sketch, the positions rather than the nature and extent of the various works proposed are given or rather hinted, as it would be obviously going too far to give details on a project which would be subject to so many varying conditions, and which in itself is of such a peculiar nature.

As is well-known, the population of Pera, Galata, and the various suburbs on the eastern shore of the Golden Horn and northern shore of the Bosphorus, forming part of the city known to Europeans as Constantinople, contains a large percentage of Christians, and is, moreover, not anything like as great as that of Stamboul. The latter place is essentially the Turkish quarter, the abode of the Softas, and in the case of a crisis is, for many reasons, where the Moslem element would have to be feared. The town on the Pera side is unenclosed, and is moreover of a very straggling description on the outskirts, consequently it would be more difficult to overawe any aggressiveness on the part of the inhabitants with a small force on this side.

On the right and next to the Golden Horn, the existing old redoubt would have to be held and strengthened. The position on which this work is

situated is strong, and commanding towards the town, there being a fine open glacis-like slope down to where the houses commence. The redoubt could easily be made into a strong work, the ditches are still very perfect, and in winter full of water. From this work round by the north to the Bosphorus, it is by no means easy to lay down a hard-and-fast line to be occupied. In the first place, how far would it be desirable to abandon large barracks, hospitals, &c., on the left. Possibly and very probably a European force would be bound to hold these buildings, in which case the line of defence would be from the old redoubt by the Christian Cemeteries G, the barracks A, to the Artillery barracks C, holding the Staff College and ridge in rear as well. This line is open to a great many objections. In the first place, it is much too near the town, which is exceedingly straggling in character in its outskirts just here, and would, moreover, be liable to be taken in reverse by the populous suburbs to the east of Dolma Bagleh. Communications between the large barracks at A and those on the extreme left would, moreover, be liable to be cut on the high road between them, and have to be carried on round by the rear from the Staff College.

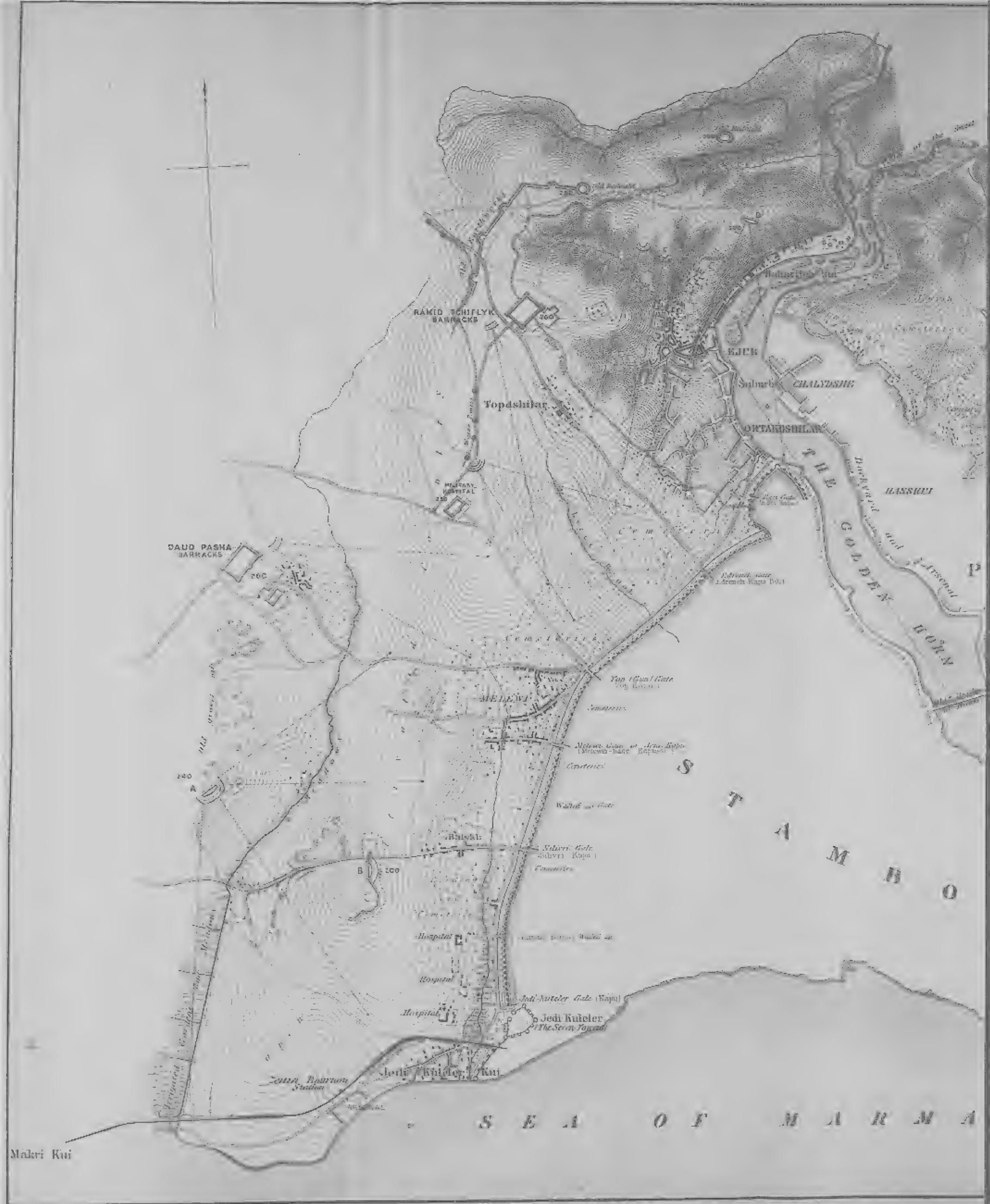
The ridge on which the Staff College is built forms a good position towards the west, the slopes are very steep, the ridge has a row of large well-built stone houses, with high walled enclosures along the top, and could be most effectually flanked from F. The line, then, from the Cemeteries G, the barracks A, the Staff College, and the Dolma Bagleh Serai, would be a much better one than the first, and would, moreover, cut off the town down to the shore of the Bosphorus. It is, however, open to the objection of the suburbs before mentioned, taking it in rear. These two lines depend upon the necessity of holding the large buildings previously described, otherwise it would be far more desirable to hold a clear position outside the straggling outskirts, where any attack from the town would have to advance in the open, and anything like street or house fighting carefully avoided. This would of course put a disorganized body of men, however brave and determined, to great disadvantage.

The cemeteries at H and G are large spaces, surrounded by high massive stone walls, and could be made excessively strong. The cemetery at G has the disadvantage of being close to the town, and partially surrounded by straggling patches of wooden houses. These houses are nearly all inhabited by Christians.

The cemeteries at H are situated on a high commanding position, and command the ground well all round. This would undoubtedly be a desirable point to hold and strengthen, and would form the centre of the position. Between these cemeteries and the redoubt, it would be desirable to throw up a work at P or P^1; this would be a good position for some guns, and would effectually sweep the open slopes of the valley between Feri-keui and the redoubt. These batteries, or battery, would be effectually flanked from the cemetries at H, and it would be advisable to make a redoubt somewhere at I, to protect them on their right. Between the cemetries H and the proposed redoubt S, there are numerous spurs looking into a deep valley, with very steep slopes; these form a series of excellent positions for guns marked O O Q. Flanked on their right by the cemeteries at H and supported by the redoubt S, they would have little to fear in their front. A final position on the spur at V for a few guns, and well under the protection of the redoubt S, would complete the line. Little would have to be feared from anything further to the east of this point. Guns at V could effectually fire down the valley to the water's edge, and a man-of-war stationed near the shore here would effectually prevent the end of the line being turned.

One great advantage is presented by this outer line, though it may appear somewhat extended. It is very desirable that any defensive precautions should not excite suspicion. If houses were demolished, occupied, or loop-holed, the very object of these defensive measures might be frustrated, but if redoubts, batteries, &c., were constructed in the positions hinted, they might easily be made to belong to some supposed last line of defence of Constantinople against an exterior enemy, in fact, the positions shown are in themselves on the reverse of a very probable line of defence for such a purpose.

The whole line of defence proposed would be practically divided, by the Golden Horn into two parts. The question of bringing up reinforcements on the Pera side is a difficult one, and would probably have to depend on the Sea.



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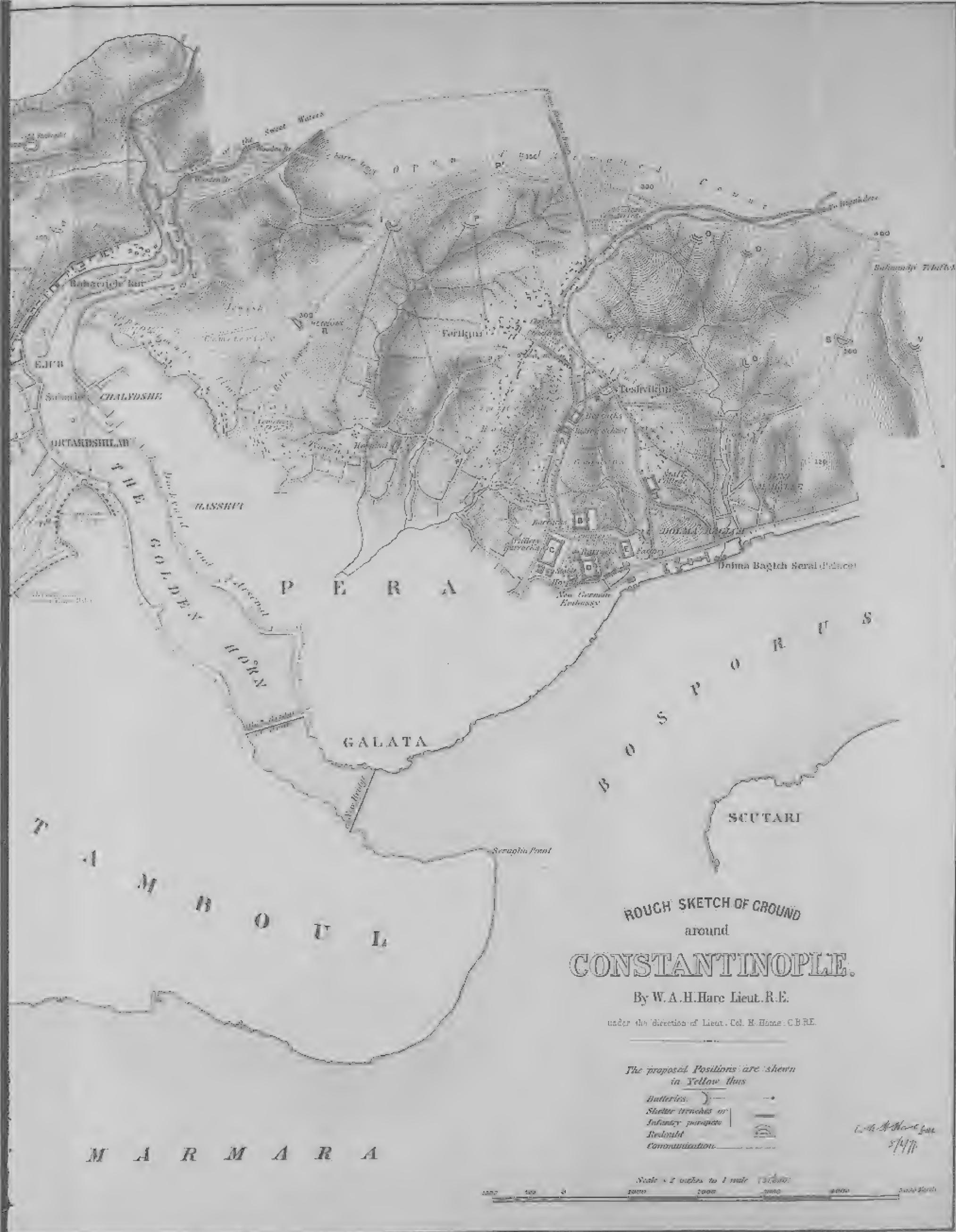
Lith^d at the Intelligence Branch, Q^r Mr Genl Department.
under the direction of Col. [illegible]
April 1878


ROUGH SKETCH OF GROUND
around
CONSTANTINOPLE.
By W. A. H. Hare Lieut. R.E.
under the direction of Lieut. Col. H. Home C.B.R.E.
The proposed Positions are shewn in Yellow thus
Batteries
Shelter trenches or Infantry parapets
Redoubt
Communication
Scale 2 inches to 1 mile
PERA
GALATA
SCUTARI
MARMARA
BOSPORUS
THE GOLDEN HORN
CHALYDSHE
HASSKUI
Dolma Bagtch Serai (Palace)
Seraglio Point
New Bridge
Ferikjui
Teshvikjui
Bahamdji Tchiftlik
Rabarijeh Kur
Sweet Waters
Open Cemetery
Cemetery
Barracks
Artillery Barracks
Factory
New German Embassy
Lith^d at the Intelligence Branch, Q^r Mr Genl Department
PUBLIC RECORD OFFICE
Reference :—
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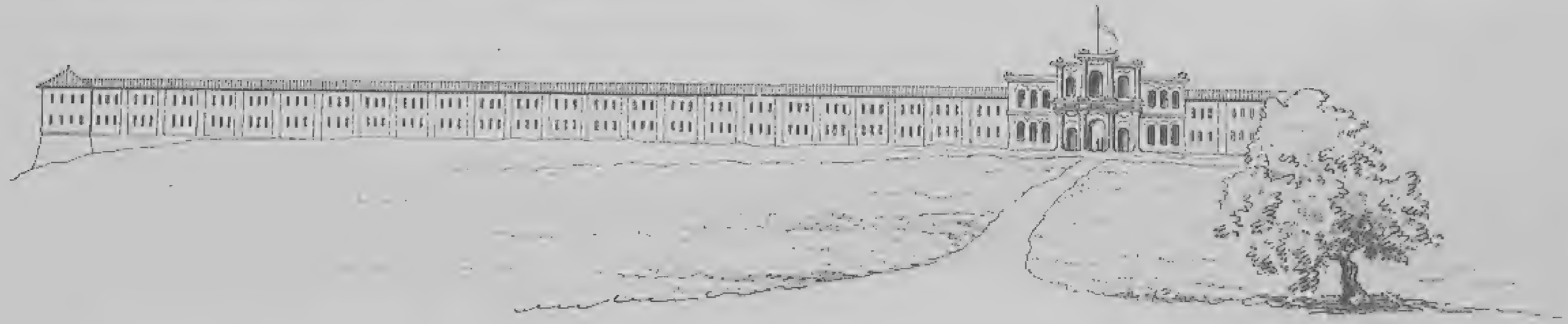

FRONT ELEVATION OF HALF OF EAST FACE OF 'DAUD PASHA' BARRACKS.

Lith^d at the Intelligence Branch Q^r Mr Genl Department
under the direction of Lt Col. S. Rowe C.B. R.E.
April 1866

VIEW OF MILITARY HOSPITAL LOOKING WEST

(SMALL WALL IN FRONT OF BUILDING REMOVED)

Lith^d at the Intelligence Branch, Q^r Mr Genl Department
under the direction of Lt Col. R. Home C.B.R.E.
April 1877

VIEW OF RAMID TCHIFTLYK BARRACKS LOOKING N.E

Col. A. Hare
Del.

There is an excellent road to the position from Buyuk-Déré and Therapia; this might be used, or some intermediate point between this and Galata might be chosen. The lateral communications between the two halves of the line of defence would be *via* the valley of the Sweet Waters and the village of Köpri.

An excellent road runs parallel to the river in the valley from Köpri *via* the wooden bridge to the village of Viahat-hane, whence a newly made, very good road leads to the centre of the position at the cemeteries H. The road from Köpri to the barracks of Ramid Ichiflyk is very bad, in many places only a track. The roads on the tops of the hills are as a rule tolerably good.

Makra-keui would of course be the point whence troops could be drawn to reinforce those holding the proposed line enclosing Stamboul. The railway from this place leads to the centre of the proposed line of defences at Hadem-keui, some 40 kilometres distant, whence troops could be sent to the barracks of Daud Pasha or Ramid Ichiflyk without exciting any mistrust among the inhabitants.

17*th March* 1877. W. A. H. HARE, *Lieutenant, R.E.*

MEMORANDUM BY SIR LINTORN SIMMONS ON LIEUT.-COLONEL HOME'S DESPATCH No. 28 OF 19th MARCH 1877.

This report (No. 28, by Lieut-Colonel Home) and its enclosure, with sketches by Lieutenant Hare, reflect great credit on those officers. They have been made in compliance with a paragraph in the instructions originally given to Lieut-Colonel Home, to the following effect:—

"As the position will be in the vicinity of a large city, comprising a population of a million inhabitants of mixed creeds, among whom difficulties may possibly arise, it is desirable that all roads leading to the Bosphorus should be reconnoitred and positions selected, which the force holding the lines might, in case of necessity, take up to command and act against the town. This consideration also renders it most desirable that the troops should not depend for their supplies on the town, but rather on a port on the Sea of Marmora, either Kutchuk, Cheekmejeh, or near the Government Powder Works, where wharves are believed to exist."

Acting under these instructions, the village of Makra-keui, close to the Government Powder Works, about two miles outside the old walls of Stamboul, where the railway emerges from them, has been selected as the most suitable position for disembarking stores and for a depôt. This village would, therefore, form the base for the supply of any force occupying the Buyuk-Cheekmejeh Position. It has consequently been necessary to provide for its security, in case of distubances occuring within the town.

The proposition made in these reports to occupy the Daoud Pasha barracks and the ground in front, coupled with some slight works at the village of Makra-keui itself, and good police arrangements to keep out stragglers, would appear to provide sufficiently for the defence of the depôt until reinforcements could arrive from the main position in front.

The proposal to separate the town in two parts, by holding the Golden Horn by ships, limits the danger to the troops occupying the position at Buyuk-Cheekmejeh almost entirely to an *emeute* of the population in the Turkish city of Stamboul and the villages south and west of the Golden Horn, because any movement round the head of the Golden Horn from the Pera side would require organization in excess of what may be expected from a mob, and would require such a time for its execution as would permit of measures being taken for its defeat.

It appears probable, that with an improved organization of the police, as proposed by Lieut.-Colonel Home, by absolutely separating the chief Christian quarters from the Moslem quarters of the city by the Golden Horn, and by holding the Bosphorus, which would prevent reinforcements coming across from the Asiatic side, coupled with the powers of movement secured by the railroad

and by having the command of the sea, no *emeute* could be organised and developed which could not be easily quelled, always providing that any Turkish troops co-operating in the defence did not combine with the rioters.

For this reason, although it would undoubtedly be advisable, as suggested by Lieut.-Col. Home, that the police, when necessary should be aided by Turkish troops, it would be well in case of occupation of the Peninsula to keep the bulk of the Turkish auxiliaries well to the front with their artillery in occupation of the lines for which they would be admirably adapted, and to limit the occupation of the city and its immedate environs to a small force of a few battalions of infantry.

J. L. A. SIMMONS.

24th March 1877.

No. 29.

LONDON,
21st March 1877.

Sir,

I have the honour to forward herewith a report on Varna by Capt. Grover and Lieut. Cockburn, and a similar report by the same officers on Pravadi.

With reference to these reports, I would venture to observe that, as the Turkish government refused to grant permission to any of my officers to visit the works, the information obtained and herewith forwarded was only such as the officers, as private individuals, could procure. As regards the force of the Turkish army, I agree with Capt. Grover that the battalions have been strengthened, but not to the extent he appears to think.

The battalion he refers to as being 1,200 strong I saw at Constantinople as it marched for Varna. Struck by its strength I made inquiries, which showed that the battalion was only 780 strong, the remainder being drafts for other battalions attached for the journey to Varna.

When in Rustchuk I met the Military Secretary of the Commander-in-Chief of the army on the Danube who gave me what he said was a complete state of the Turkish forces under the command of Ahmet Eyoub. This paper I attach, and I think it may be taken as a fair statement of the strength of the Turkish army at the end of February.

I have the honour to be,
Sir,
Your obedient Servant,
R. HOME, *Lieutenant-Col., R.E.*

The Inspector-General
of Fortifications.

Inclosure 1 in No. 29.

MEMORANDUM ON VARNA, VISITED ON THE 17TH–18TH FEBRUARY 1877, BY CAPTAIN G. E. GROVER, R.E., AND LIEUT. G. A. COCKBURN R.E.

Troops in Varna.—The following particulars were obtained from the British Vice-Consul, Mr. W. H. Dalziel, who had collected the statistics from the Varna station-master (Mr. J. Wroblewski, a Pole), and from other informants, besides using personal observation.

Up to the date of our visit, there had arrived from Constantinople by sea about 50,000 men, viz., up to the 1st February, 60 battalions (including 6 battalions of Egyptians), each battalion averaging 600 strong, or 36,000 in all.

SKETCH SHOWING
THE APPROXIMATE POSITIONS OF THE NEW WORKS
AROUND
VARNA
IN COURSE OF EXECUTION FEB. 1877.

N.B. The altitudes were determined by a 3-inch aneroid barometer.
The approximate positions of the works were ascertained by means of a prismatic compass used whenever possible without attracting attention.

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After the 1st February, there arrived in the

"Ourhanie,"	4th February,	3	Battalions	..	..	..	2,100
"Mahmoudie,"	5th	"	3	"	..	..	..	2,100
"Talia,"	7th	"	1	"	..	..	..	700
"Mahmoudie,"	9th	"	3	"	(redif)	..	..	3,300
"Rourhanie,"	12th	"	3	"	..	..	..	3,000
"Azizie,"	13th	"	3	"	..	..	..	3,000
							14,200

It is remarkable how much stronger the battalions have recently been made. The doctor of the "Mahmoudie," a Greek, assured Mr. Dalziel that one of the battalions disembarked on the 9th February was more than 1,200 strong.

Out of this total of 50,000, it is estimated that about 15,000 have proceeded to Silistria by road; and nearly 22,000 have proceeded elsewhere by rail, according to the following detail:—

	Men.	Officers.	Horses.
Up to the 1st February—			
For Rustchuk	4,354	127	49
" Rasgrad	545	..	10
" Pravadi	509	..	..
" Schumla	11,020	140	93
Total	16,428	267	152

	Men.	Officers.	Horses.
After the 1st February—			
For Rustchuk	1,635	33	9
" Rasgrad	481	17	1
" Pravadi	1,326	38	16
" Schumla	1,921	52	34
Total	5,363	140	60

leaving about 13,000 as the present force in Varna, which is the estimate stated to Mr. Dalziel, two days before our visit, by Said Mechmet Pacha, the Mutesserif of the Sandjak of Varna.

The Commandant de Platz is Raschid Pacha, who ranks junior to the Egyptian commander.

The Commandant of the Forts is Izier Bey, who is also a Javer or A.D.C. to the Sultan.

Among the Egyptians are more than 200 Christians (Copts), and about 50 Jews.

The Egyptian battalions are well clothed, and apparently well fed. They have an organized Commissariat Department with a distinctive uniform, and appear to be well cared for.

Artillery in Varna.—According to a statement made to Mr. Dalziel by Izier Bey, Commandant of the Forts, there were in Varna, previous to the 1st February, but 6 B.L. rifled guns and 260 M.L. smooth-bored guns.

There arrived from Constantinople in the "Medjidie" on the 1st February 31 Krupp B.L. 12-cm. guns, and, on the 7th February, 23 Krupp B.L. 15-cm. guns, with 15 mountain field pieces, and large quantities of conical shells for the Krupp guns, and spherical shells for the S.B. ordnance.

Of the 54 heavy guns 44 are destined for Varna, the rest for Widdin, and to the latter place 4 of the 12-cm. and 4 of the 15-cm. guns were despatched by railway on the morning of our arrival (the 17th February).

Small-arm Ammunition.—The following weights of small-arm ammunition have been forwarded by rail from Varna :—

	Up to 31st Jan.	From 1st Feb.	Total.
	kilos.	kilos.	kilos.
To Rustchuk	71,650	19,000	90,650
" Rasgrad	25,000	24,000	49,000
" Pravadi	26,650	10,000	36,650
" Schumla	251,350	30,000	261,350
Total	354,650	83,000	437,650

Local Statistics.—The number of houses in Varna is about 5,000, with an estimated population of 25,000—half Turks and half Christians, who are of Greek religion but Bulgarian origin, and spoke Turkish till about 30 years ago.

The cultivation in the neighbourhood consists chiefly of the wheat and the grape. The average annual yield of wheat per acre is 11 kilos. Of wine, the average annual yield is 2 million okes (the oke = 2·8 lbs.), although in the exceptionally bad year 1876 only one-half of that quantity was produced.

The commercial importance of Varna will be understood from the following tabular statement of the exports and imports during the year 1876, compiled from returns furnished to the British Vice-Consul :—

STATISTICS OF IMPORT AND EXPORT TRADE, VARNA 1876.

	Imports.				Exports.				
	No.	Tonnage.	Crew.	Cargo.	No.	Tonnage.	Crew.	Cargo.	Remarks.
British.									
Steamers	16	12,327	398	5,918 tons coals, and 547 boxes of assorted manufactures.	16	12,327	398	374,225 kilos. maize; 49,500 kilos., corn; 66,040 kilos. barley.	
Sailing vessels.. ..	4	1,255	34		4	1,255	34		
Russian.									
Steamers.									
Sailing vessels.. ..	3	221	24	4,000 planks	3	221	24	17,800 kilos., wheat.	
French.									
Steamers	40	33,019	1,869	909 sacks coffee; 110 barrels sugar and various manufactured goods (total value, 784,946 francs).	40	33,019	1,869	4,925 charges wheat; 301 balls. wool; 2,453 sheep, and various goods (total value, 259,318 francs).	Charge=44 bushels.
Austro-Hungarian.									
Steamers	127	108,197	5,069	3,475 sacks coffee; 2,660 sacks rice and other goods (total value, 2,540,730 francs).	127	108,197	5,067	91,130 staja wheat; 106,919 staja maize; 15,249 sacks flour; 663 horses, 64 oxen and buffaloes and other goods (total value, 2,692,561 francs).	Staja=2·33 bushels.
Sailing vessels.. ..	5	1,764	53		4	1,365	43		
Greek.									
Steamers	7	2,268	122	Various	7	2,268	122	Various.	
Sailing vessels.. ..	38	7,813	326	Sea salt 490,000 okes; lemons 36,000 pieces (total value, 182,400 drachms).	38	7,813	326	Cereals (total value, 1,878,400 drachms).	
*Turkish.**									
Italian.									
Steamers	4	2,675	128	Ballast	4	2,675	128	Wheat .. Etto-Litri. 12,178; Value in Italian Liras. 164,362	1 etto litri=2¾ bushels.
Sailing vessels.. ..	27	10,051	337	.. .. ..	25	8,950	309	Flour .. 2,000; 24,000	1 quintal=100 kilos.
								Wheat .. 164,565; 2,221,628	
								Barley .. 13,786; 170,218	

* No returns yet furnished to the British Vice-Consul, although several times asked for and promised.

Works of Defence.—It is considered unnecessary to describe the old bastioned lines round Varna, since they are of small value in the present day and are, it is believed, well known. The only additions to them which appear to have been made since 1854 are a new brick powder magazine at the south-west end of the town and a reconstruction by sod-work of the parapets of the *tête-de-pont* (Talabkûpri Tabia) and of the southern lines.

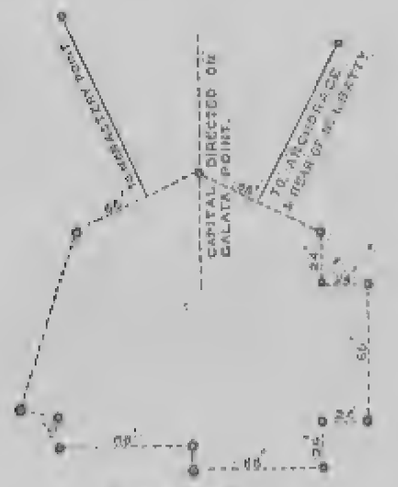
The following are the new works, either in course of construction or projected. But it is to be observed that not a single gun has yet been mounted, and only one gun carriage has been placed :—

On north side.	No. 1, Coast Battery, south of British Cemetery.
	„ 2, Nicholas Hill Battery.
	„ 3, Fort Kestritsch.
	„ 4, Fort Jussuf Izzedin.
	„ 5, Fort Franga.
	„ 6, Advanced Fort right.
	„ 7, „ „ left.
On south side.	„ 8, Circular Fort.
	„ 9, Bourgas Fort.
	„ 10, Galata Battery.
	„ 11, Lighthouse Battery.

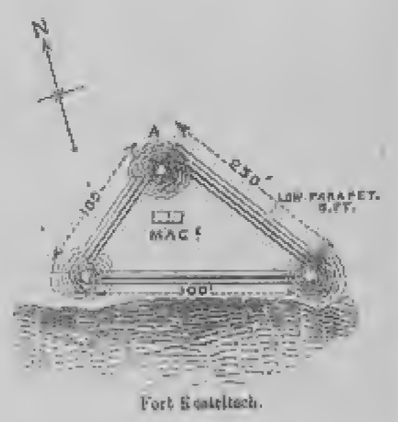
The accompanying sketch shows the approximate positions of these works, as roughly determined with a prismatic compass and aneroid, and the following particulars were noted on visiting each work :—

No. 1. Coast Battery, 400 yards south of the British Cemetery. (Height above sea, 35 feet.) The object of this battery is to command the anchorage to the south and the approach from the north-east in the direction of the Gorgof Burun (known also as the "Monastery Point"). The old battery, of bastioned trace, is being remodelled and extended in the direction of the town, the right face having been reconstructed to a length of 35 yards, with a 40 feet parapet, so as to bear upon the north-east part of the harbour. An old magazine in this battery is being rebuilt, but apparently only one week's work has been expended on it. The working party consisted of 250 Egyptians. The soil is a loamy sand.

No. 2. Nicholas Hill Battery (height above sea, 340 feet).—This work has merely been picketed out, and not a sod has yet been turned. It will occupy the summit of a conical hill 120 feet high, and about 150 feet in diameter at the top.



Nicholas Hill Battery.

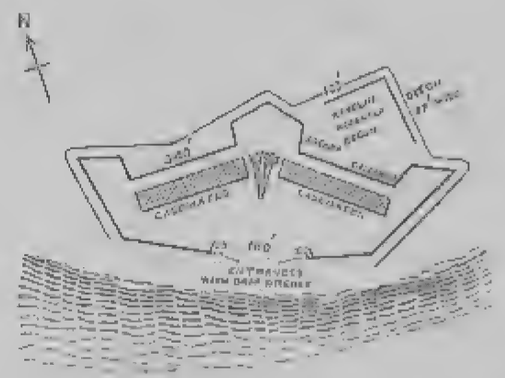


Fort Kestritsch.

No. 3. Fort Kestritsch (height above sea, 1,020 feet), formed by connecting three tumuli by lines of a parapet, and levelling the tops of the tumuli, apparently for guns. The tumulus A is 40 feet high, and defilades the interior of the work

from elevated ground in front, and about half-a-mile distant. The ditches and parapets are half formed; the former are 30 feet wide at the top, excavated in soft friable limestone. The magazine is half built; it consists of two rooms, each 30 feet by 15 feet, the walls, 2 feet thick, being built of rubble masonry, from hard nummulitic limestone found near the surface, about ¼ mile east of the fort. The working party consists of about 300 Turks, encamped in 27 tents close to the fort. They commenced work, it is said, on the 13th December.

No. 4. Fort Jussuf Izzedin (height above sea, 1,080 feet). This fort is said to have been in course of construction for three years, and originally intended to have been finished a year hence. According to the present rate of progress, at least six months more will be required to place the work in a proper state of defence. Fourteen casemates have been built, with accommodation for 600 men. Between the village of Franga and this fort several thousands of brushwood gabions have been stored, and more are being daily manufactured, for the interior slopes of the parapets (according to the Turkish soldiers), but more probably for connecting lines.

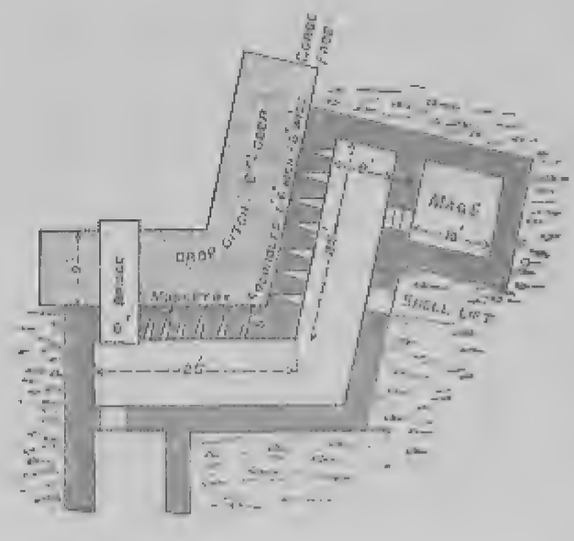


The ditches are for the chief part excavated 30 feet wide, and the parapets (30 feet thick at top) are mostly formed. The fort stands upon hard limestone, blocks of which are used in building the walls of escarp galleries and casemates. The shoulders and curtain of the north-east front are to contain escarp galleries, the arches for which are already turned in the latter, but not in the former.

The interior crest of each bastion's face is 45 feet long, and that of each flank 30 feet long.

The working party consists of 1,000 Egyptians encamped in 100 tents on the slopes of the hill, and billeted in the neighbouring village of Franga.

A vacant piece in the gorge, 180 feet long, is apparently to be closed by a wall, or stockade, and two side entrances to the gorge are thus provided :—



No. 5. Fort Franga (height 1,100 feet above the sea). Only one face, about 50 yards long, is partially executed, averaging, at present:—Parapet 30 feet thick and 6 feet high. Apparently 4 feet of additional height is intended. Ditch 18 feet wide, 6 feet deep, with a 3-foot berm. The rest of the work is not even picketed out at present. The ditch, so far as it has been executed, is dug in soft limestone. The working party consists of 130 Turks from a sheltered camp on the slopes below.

No. 6. Right Advanced Fort (height above sea, 1,100 feet) well situated on high ground in front of Fort Kestritsch. Only a week's work appears to have been bestowed upon this fort, and it is left in an unfinished state. Traces of a camp exist about 300 yards from it to the south. From the pickets left in the ground it would appear that the ditch is intended to be 30 feet wide at top, with a 3-foot berm and 20-foot parapet, but at present the parapets have only attained the height of about 4 feet, and the ditches are but 4 feet deep. The annexed diagram shows the dimensions of the work's faces, measured along the interior crests.

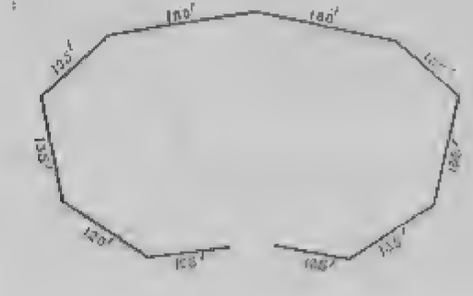
The ditches are excavated in a sandy soil.

No. 7. Left Advanced Fort (height above sea estimated at 1,130 feet); not yet traced, but said to be intended to follow the general form of No. 6, and to similarly occupy high ground in front of Fort Franga.

No. 8. Circular Fort (height above sea, 780 ft.)—This work is practically of a circular, or horse-shoe shape, its interior diameter being 100 yards. Its object is evidently to enfilade the Burgas road, which is hidden from the main Southern Fort, No. 9, by the knoll on which No. 8 stands, and its view of the ground, over which an enemy would advance from the coast, is impeded by the ravines of Pacha Déré and a smaller valley running parallel to it, nearer to the fort, both of which would afford good cover to an enemy advancing from the south.

The height of parapets at present averages 4 ft., and the ditches are only excavated in part. The gorge has not been commenced. All the work executed is roughly and irregularly carried out. The working parties of this, and the adjoining fort consist of two battalions of Egyptians encamped in wattle and daub huts, in low ground between and about 400 yards in rear of the two Forts 8 and 9.

No. 9. Bourgas Fort (height above sea, 780 ft.)—The object of this work is apparently to see the high ground between the coast and the Burgas road, and to fire obliquely into the Devna Lake valley. The ditches, irregularly excavated, average 6 ft. in depth, and the parapets have attained the height of from 5 to 6 ft.



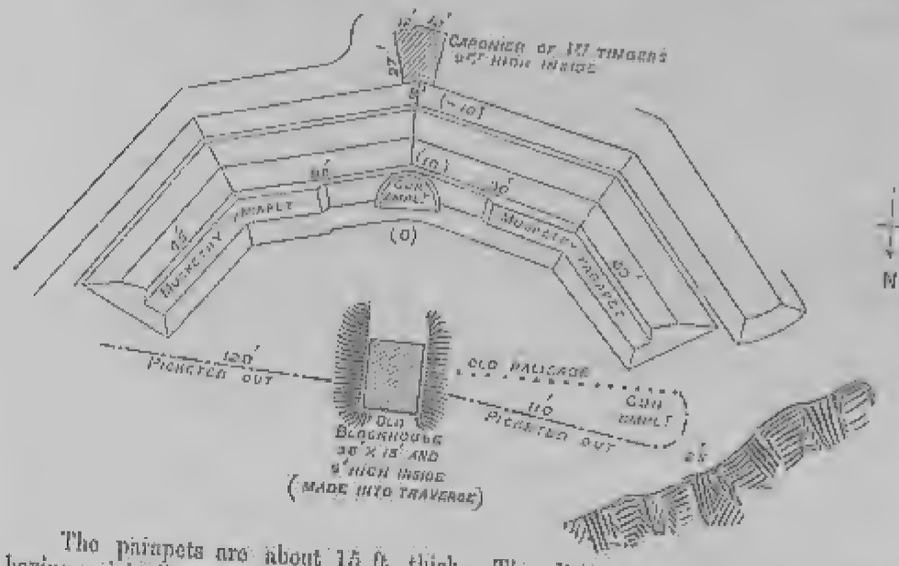
Apparently the ditches, when finished, will have a width at top of 30 ft. and the parapets will be about 35 ft. thick.

The above sketched diagram shows the dimensions of the work as paced along the berms.

No. 10. Galata Battery. (Height above sea 280 ft.).—Recently remodelled and extended from an old coast battery, situated on a knoll between the village of Galata and the Lighthouse.

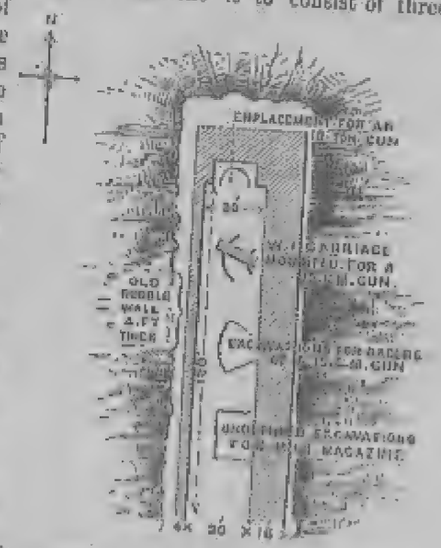
It has been reconstructed apparently to prevent an enemy who might have landed on the south-east coast and seized the village of Galata (which, being on a slope, is unseen by the Fort No. 9) from taking the Lighthouse battery No. 10 in reverse.

It is estimated to be about 100 ft. below the village of Galata, and from 600 to 800 yards distant from it.



The parapets are about 15 ft. thick. The ditch is indefinite, the battery having originally been constructed (it is said) 20 years ago, and used since as a practice battery. The capital of the work is directed between the village of Galata and the coast.

No. 11. Lighthouse Battery. (Height above sea 180 ft.), situated upon a narrow ledge of rock overlooking the Lighthouse. The armament is to consist of three guns (as stated by the Egyptian Chief of the Staff) one firing to the north upon the anchorage and across the bay, the others firing to seaward, all *en barbette*. At the entrance to the battery lie three English cast-iron S.B. guns (? Monk's A 32-pr. of 50 cwt. ?) but without carriages. Below the east 18 ft. parapet the cliff falls steeply, almost vertically, to the sea. The working party consists of Egyptians, billeted in the village of Galata.



In these new works not a gun had been mounted, at the date of visit (18th February 1877) nor had any platforms been laid, with the solitary exception of that for the gun carriage at the Lighthouse Battery.

The main object of these modern fortifications being obviously to prevent an occupation of the north and south heights which command the town and anchorage of Varna, it would appear that one of the conditions assumed for deciding the selection of sites for these works was to obtain an oblique defence, in a westerly direction, of the Devna valley, through which run the railway and road from Rustchuk, Schumla, and Pravadi.

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To fulfil this condition, the works would appear to have been too rigidly applied to the interior crests of the lines of heights, instead of occupying sites more to the front, which would command more extended fields of view and permit the construction of fewer works, with an equal effect.

This is especially noticeable on the north side, where the evils of the contracted position at first selected have apparently become so patent to the Turkish authorities as to cause them to seek a remedy for its defects in a second or outer line of advanced forts.

And on the south side, the existence (apparently for this purpose) of a large fort, No. 8, is hardly justifiable, when a small enfilading battery, open in rear, would as effectually deny an enemy's advance along the road from Bourgas.

It may be doubted whether, under the conditions of modern weapons, the Galata Battery (No. 10) would in the least prevent the fall of the Lighthouse Battery (No. 11) to an enemy who might have gained the Galata village.

Yet this work has attained a more advanced stage of completion than any other in the entire system of defence now in course of execution round Varna.

It is also remarkable how the works have in turn been begun and left unfinished, without any apparent appreciation of their value or of their relative importance.

At the time of our visit, they were being executed in a desultory manner, without a proper organization of labour and direction of the working parties, involving (as the necessary results of a want of order and supervision) a great waste of labour, and a delay in completing what is apparently deemed necessary for putting Varna into an adequate state of defence.

G. E. GROVER, *Capt. R.E.*
G. A. COCKBURN, *Lieut. R.E.*

Lieut.-Colonel R. Home, C.B., R.E.

Inclosure 2 in No. 29.

MEMORANDUM ON PRAVADI, VISITED THE 20TH FEBRUARY, 1877, BY CAPTAIN G. E. GROVER, R.E., AND LIEUT. G. A. COCKBURN, R.E.

General description.—The town of Pravadi, consisting of about 1,000 houses, with a Turkish population of 5,000 inhabitants, under a Kaimakam, is situated astride the river Pravadi, a tributary of the Devna, at the bottom and north end of a flat valley, from half to three-quarters of a mile wide, forming a defile about 2½ miles long, which is enclosed by steep hills rising almost precipitously to a height of from 600 to 700 feet.

The river flows through this gorge in a southerly direction. The geological formation of the rocks includes nummulitic limestones, with some sandstones, and marls, all belonging to the cretaceous period.

Trade.—Pravadi forms the centre of an important agricultural district, whose produce is said to be on an average per annum—

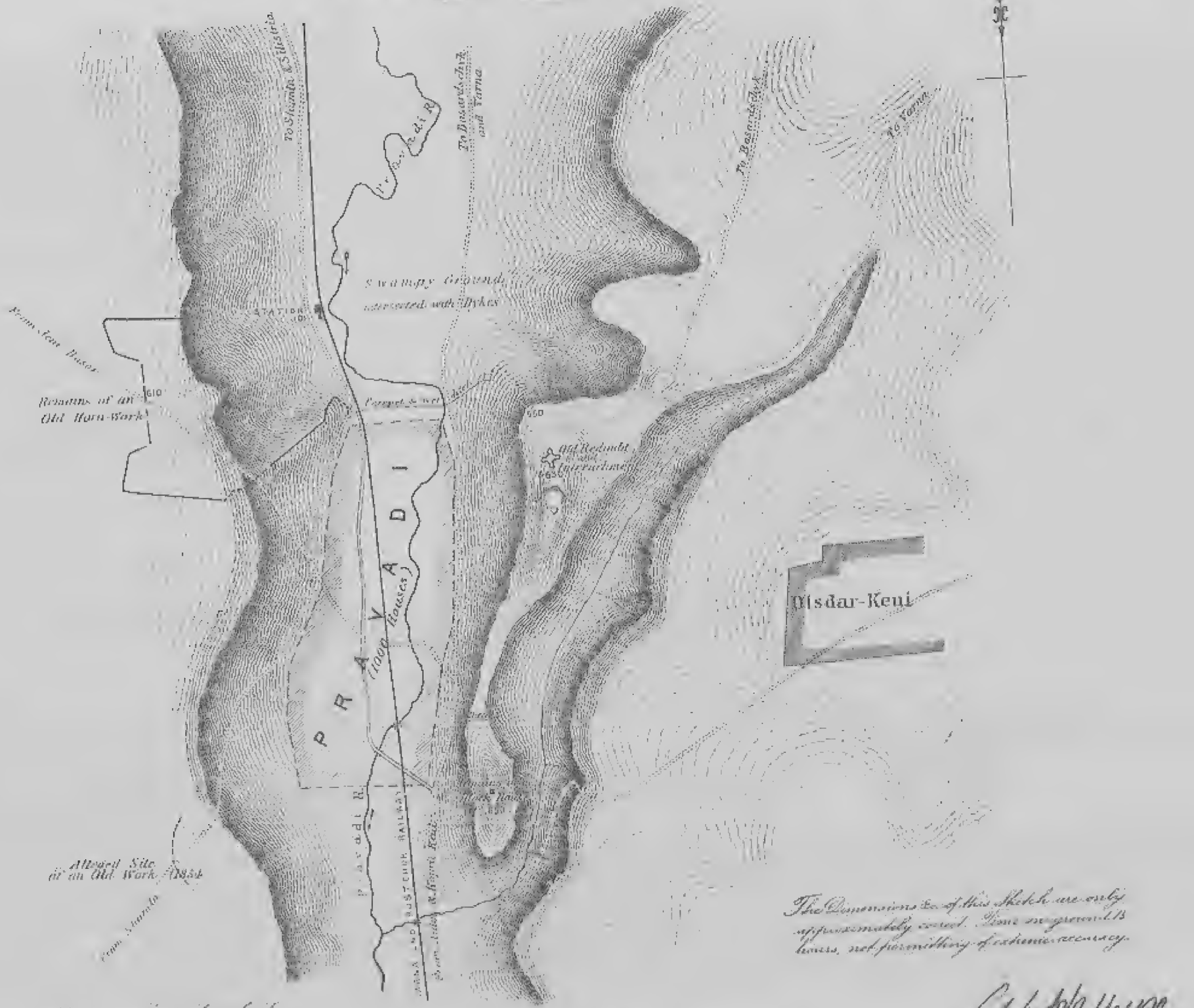
From	130,000	to 150,000	kilogrammes of	Wheat.
„	3,000	to 4,000	„ „	Barley.
„	8,000	to 10,000	„ „	Maize.

Military Value.—Pravadi was formerly the inland residence of the Mutasserif of the Sandjak of Varna, but its importance has now diminished in that; Varna has become the seat of government. Its main importance at the present moment, from a military point of view, appears to consist in its proximity to the junction of the two direct routes from Silistria and Tultscha to Aidos; but the reputed inferiority of these tracks appears to diminish that military importance—a view which seems to have been taken by the Turkish authorities, who have taken no steps to strengthen the post for more than 20 years. Von Moltke remarks (p. 50): "This "defile may be avoided by a circuit on either side, but with some difficulty."

Railway.—The Varna—Rustchuk Railway passes through the town, which is distant (according to measurements along the line of rails)—

32 miles from Varna, and
106 „ „ Rustchuk.

EYE SKETCH
OF THE
PRAVADI VALLEY



Roads.—No paved road passes actually through Pravadi, but the main Schumla—Janibasar—Varna road, said to be paved and one of the best in Turkey, runs 10 miles north of the town in an easterly direction, and is linked to Pravadi, west of the village Disdar-Keui, by a country track.

Ordinary country tracks connect Pravadi with Basardschyk, Silistria, and Schumla, and a second country track to Schumla, of an inferior description, rises abruptly over the west hills of the valley, leaving the town in a westerly direction.

The inhabitants estimate the distance of their town in summer to be 10 hours from Basardschyk in a northerly direction, and the same from Aïdos in a southerly direction.

Troops in the Town.—There were, at the date of our visit, but 740 men in the town, according to the railway officials of the Pravadi Station, who had counted the troops on arrival and on departure. These troops were all billeted in private houses and in the khans.

Fortifications.—The earthworks shown upon the accompanying sketch are all, more or less, in a dilapidated condition. They appear to have been constructed at two different periods,—viz, 1st, in 1829; and 2nd, in 1854.

Of these the first consist of—

(*a.*) A hornwork commanding the west track to Schumla,—nearly obliterated.

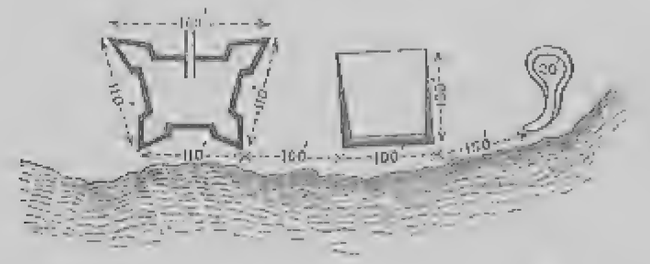
(*b.*) A line of parapet, covering the north entrance to the valley,—apparently constructed in 1854, and now in a fair state of repair, with a good wet ditch.

(*c.*) A corresponding line of parapet on the south side of the valley,—in a ruined condition.

The works of the second class (apparently of 1854) consist of—

(*a.*) A rough work, covering the Aïdos road on the south-west side of the valley,—in a ruined condition.

(*b.*) A quadrangular bastioned redoubt, with gun-pits, on the north end of the main spur jutting into the valley, their object being evidently to



afford a fire upon the north end of the valley, and to prevent any advance in reverse from the village of Disdar-Keui. These works are now in rather bad repair, and were, it would seem, but roughly constructed in the first instance.

G. E. GROVER, *Captain R.E.*
G. A. COCKBURN, *Lieut. R.E.*

Lieut.-Colonel R. Home, C.B., R.E.

Inclosure 3 in No. 29.

STRENGTH of Turkish Army in the Vilayet of the Danube. Colonel Home's Estimate, February 1877.

VARNA.

	Batteries, &c.	Men.
Artillery, Batteries	..	..
Infantry (Nizam and Redj), Battalions	14	8,400
Cavalry, Squadrons	..	..
Engineers, Companies	2	200
Total strength	..	8,600

Schumla.

	Batteries, &c.	Men.
Artillery, Batteries	..	..
Infantry (Nizam and Red), Battalions ..	12	7,200
Cavalry, Squadrons	6	600
Engineers, Companies	..	..
Total garrison	..	7,800

Silistria.

	Batteries, &c.	Men.
Artillery, Batteries	2	240
Infantry (Nizam and Red), Battalions	22	13,200
Cavalry, Squadrons	6	600
Engineers, Companies	..	..
Total garrison	..	14,040

Rustchuk.

	Batteries, &c.	Men.
Artillery, Batteries	3	360
Infantry (Nizam and Red), Battalions	10	6,000
Cavalry, Squadrons	..	..
Engineers, Companies	1	100
Total garrison	..	6,460

Sistova.

	Batteries, &c.	Men.
Artillery, Batteries	2	240
Infantry (Nizam and Red), Battalions	1	600
Cavalry, Squadrons	..	..
Engineers, Companies	1	100
Total garrison	..	940

Nicopolis.

	Batteries, &c.	Men.
Artillery, Batteries	1	120
Infantry (Nizam and Red), Battalions	1	600
Cavalry, Squadrons	..	..
Engineers, Companies	..	..
Total garrison	..	800

Widdin and Zaitchar.

	Batteries, &c.	Men.
Artillery, Batteries	14	1,680
Infantry (Nizam and Red), Battalions	48	28,800
Cavalry, Squadrons	12	1,200
Engineers, Companies	1	100
Total garrison	..	31,780

Grand Total.

Varna	8,600
Schumla	7,800
Silistria	14,040
Rustchuk	6,460
Sistova	940
Nicopolis	800
Widdin and Zaitchar	31,780
	70,420

No. 30.

London,
23rd March 1877.

Sir,

I have the honour to forward a sketch showing the fortress of Rustchuk and the line of new works now in progress.

This plan has been prepared partly from information procured by Colonel Lennox, R.E., and Major de Torcy, French Military Attaché at Constantinople, the latter tested on the ground and the hills sketched by myself.

The town of Rustchuk contains about 5,000 houses, or 25,000 inhabitants. It is situated on the southern bank of the Danube, which is some 50 ft. to 70 ft. high, the river being about 1,100 paces wide.

The perimeter of the old *enceinte* is about 10,000 yards. The works are, as works of defence, useless, the ditches very shallow, and the masonry of an inferior nature. There are few traverses and little or no bomb-proof accommodation.

The armament, it is said, will include the following guns:—30 Krupp breech-loading 15 and 12-centimetre, of these 13 are mounted, 9 are at the railway station, and 8 more are said to be *en route*; in addition, there are 138 muzzle-loader smooth-bores (large and small) and 20 mortars.

The following armaments are at present mounted in the bastions:—

No. 1.—2 Krupp (15 and 12-centimetre), 5 M.L. guns, 4 mortars.
No. 2.—2 „ „ 7 „ 6 howitzers, 1 mortar.
No. 3.—2 „ „ 3 „ 1 mortar.
No. 4.—2 „ (12-centimetre), 3 „ 1 mortar.
No. 5.—2 „ (15 and 12-centimetre), 1 R.M.L. gun (15-centimetre), 11 M.L., 5 howitzers, and 2 mortars.
No. 6.—2 Krupp (15 and 12-centimetre), 10 M.L. guns, 5 howitzers, 1 mortar.

No guns mounted in the advanced works of any kind. With the exception of the rifled guns the armament is in a very inferior state. The exterior line of works occupies nearly 12,000 paces. The works are, with one exception, common earth-works, with ditches with sloping sides; they are usually lunette-shaped, although some are bastioned. The slopes are very steep, the works are very small, there is no appearance of either traverses or blindages. The Lévend work is the most important. It was begun about 20 years ago and has some fair stone casemates, but the ditches are not flanked.

I was informed that nearly 2,000 men were at work, but I could only see about 20, and, on asking where the rest were, I was told the weather was too bad to work.

So far as I could judge this was a mere pretext, as the day was really very fine, although foggy.

I do not think Rustchuk could be put into a state to resist a regular siege under three months' hard work, and, even then, the faulty nature of the works would leave much to be desired.

The Turks do not appear to attach much importance to it. The events of 1828 and 1854 are ever before their eyes, and they look upon Silistria as the most important of their fortresses, forgetting that the railway to Giurgevo, which admits of siege matériel being brought up with ease, will always make Rustchuk the easiest of the Danubian fortresses to capture, while the same railway renders it the best suited for a Russian *tête de pont* on the south bank of the Danube.

In considering the defensive capabilities of Turkish fortresses, it must be borne in mind, however, that the method of attack adopted by the Germans in 1870—viz., a bombardment, would produce little or no effect on the resistance made by a Turkish town. The greater portion of the house property belongs to Christians, and its destruction would not produce much effect on the Moslem defenders.

So far as I could ascertain, there was no store of provisions or any hospital arrangements in Rustchuk.

The garrison consisted chiefly of Arabian troops, and the Consul informed me that they were suffering much from want of proper clothing.

It would be impossible to defend the long chain of advanced works with less than 12,000 men, and the policy of shutting up such a force in a fortress is, considering the numerical weakness of the Turkish army, very questionable.

I have the honour to be,

Sir,

Your most obedient servant,

R. HOME, *Lieut.-Colonel R.E.*

The Inspector-General of Fortifications.

MEMORANDUM BY INSPECTOR-GENERAL OF FORTIFICATIONS, TO ACCOMPANY REPORTS Nos. 26, 29, AND 30, FROM LIEUT.-COLONEL HOME, R.E., C.B., OF THE 19TH, 21ST, AND 23RD MARCH 1877.

No. 26 encloses a report by Lieut. Hare on the fortress of Schumla; No. 29 reports from Captain Grover, R.E., and Lieut. Cockburn, R.E., on Varna, and Pravadi, and No. 30 is a report by Lieut.-Colonel Home on Rustchuk.

These reports are all accompanied by sketches of the various works, and contain statements of their condition, garrison, and armaments. The officers, however, laboured under difficulties, the Turkish authorities having refused permission for them to visit the fortresses. Although they were received with civility by the local officers, they did not acquire facilities for the inspection of the works nor for obtaining full information as to their garrisons.

The information obtained, however, is sufficient to enable a very fair opinion to be formed of the nature of resistance to be expected from the various fortresses, and somewhat of the probabilities of the power of the Turkish force north of the Balkans to withstand an attack on the part of the Russians.

For the purposes of this memorandum it will be sufficient to assume that any Russian invasion, if made, will be by a force of not less than 200,000 men.

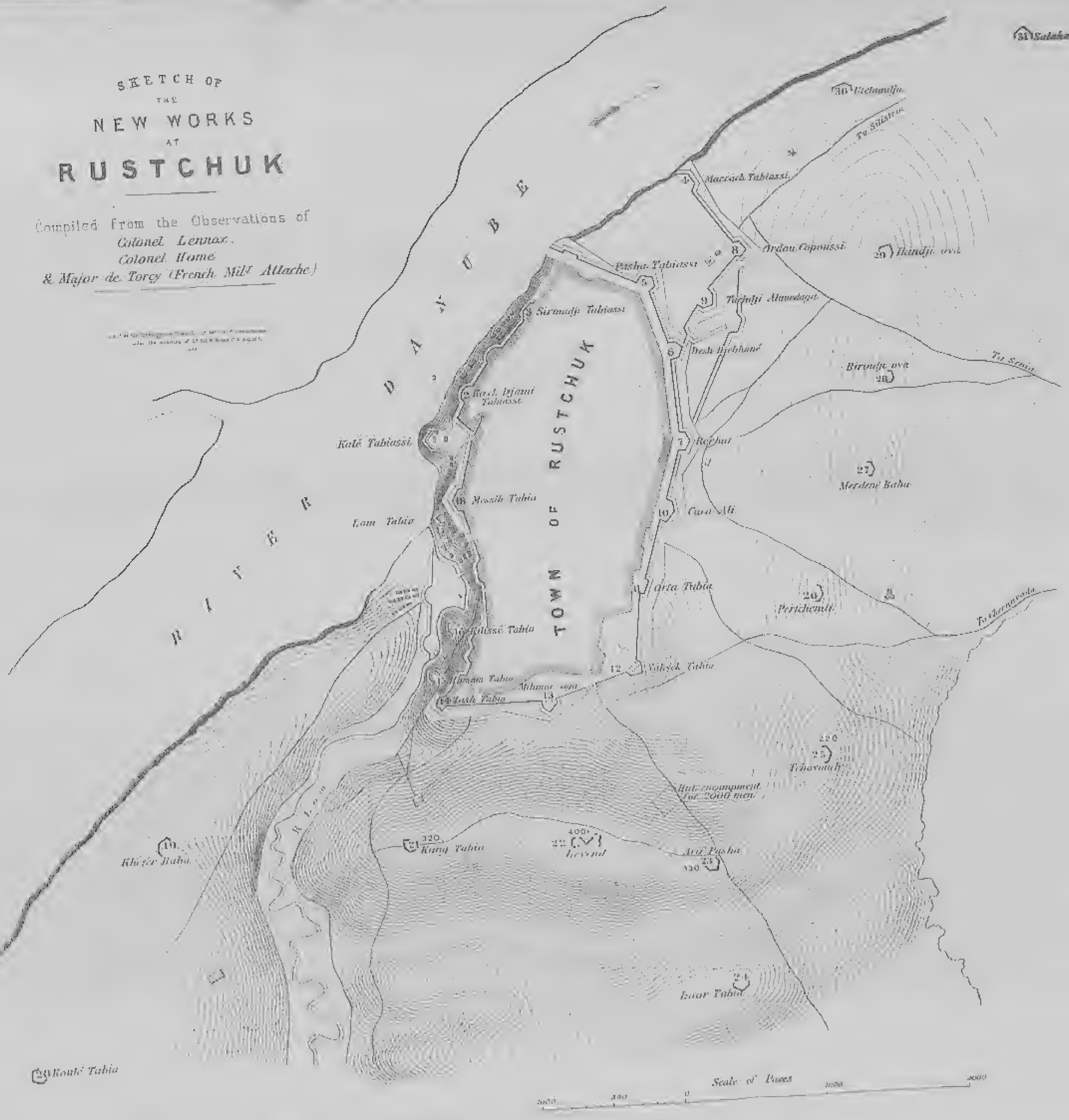
Rustchuk on the right bank of the Danube, from 50 to 70 feet above the river, completely commands the passage of the river. It is enclosed by a line of old works some 10,000 yards in length, of an obsolete trace and slight profile without traverses, or bomb-proof accommodation.

Its armament is to consist of 30 Krupp breech-loading rifled guns, of which 12 are mounted on the river front, 138 muzzle-loading old smooth-bored guns, and 20 mortars.

The town is surrounded by a chain of outworks from 1,000 to 1,500 yards in advance of the old enceinte, all of which, with one exception, are common earthworks without traverses, or any splinter-proof cover for the garrisons.

SKETCH OF
THE
NEW WORKS
AT
RUSTCHUK

Compiled from the Observations of
Colonel Lennox.
Colonel Home
& Major de Torcy (French Mil^y Attache)



That one exception is Levend Tabia, which, as being the most important, was begun about 20 years ago, and has some fair stone casemates, but its ditches are not flanked.

So far as Lieut.-Colonel Home could ascertain, there was no store of provisions, nor any hospital arrangements in the town, which contains about 25,000 inhabitants.

Lieut.-Colonel Home is of opinion that Rustchuk could not be put in a state of defence in less than three months, and would require a garrison of at least 12,000 men.

The steps being taken to place Rustchuk in a state of defence, seem now, as was the case *three* months ago, when Lieut. James, Royal Scots Greys, visited it, to be terribly wanting in energy.

Lieut.-Colonel Home states, the present strength of the garrison, as given to him by the Military Secretary of the Commander-in-Chief, to be 6,460 of all arms.

The condition of Rustchuk, as reported, is such, that although it may prevent a passage of the Danube immediately under its guns, it certainly cannot hold out long against a force of even moderate strength, which, having crossed the river elsewhere, shall move round to attack it from the south.

The absence of stores of provisions to feed the inhabitants as well as the garrison will ensure its speedy capture without the necessity of a forced attack. Good, however, as the Turks are in defence, it could, even if provisioned, be expected to hold out but a very few days against modern artillery (to which it is open to attack from the opposite islands and bank of the river) and rifled arms; which are altogether different in their operation from the arms in vogue when the Turks established their reputation as the first troops in the world for defence, a reputation which they so gallantly maintained at Silistria and Kars in 1854 and 1855.

The fall of Rustchuk would, of course, include the capture of the garrison and of its armament; but, above all, it would give the Russians a secure *tête du pont* opposite the Roumanian railway terminus at Georgevo, in direct communication with the railway leading from Russia.

It is evident that the intention to hold Rustchuk in its present state, as a permanent work, by a garrison not organized as a moveable column, is a mistake, which, by bringing about the loss of its garrison and matériel of war, will abstract that strength from the field force available for active operations.

If Rustchuk were a well-established fortress capable of prolonged defence, it would fulfil a most useful purpose by preventing the use of the railway from Bucharest to Georgevo, for the supply of the Russian army in Bulgaria. As it is, it is a mere trap, and the utmost that should be attempted is to hold it by a field force which could prevent the direct passage of the Danube, but which by falling back upon the main army before the position was turned, would be preserved for ulterior operations in the field.

In addition to the garrison of Rustchuk, 6,460 men, Lieut.-Colonel Home reports that there are distributed on the Danube as follows:—

	Men.
At Sistova	940
At Nicopolis	800
At and near Widdin	31,780
And at Silistria	14,040
There is no very positive information as to the force in the Dobrudscha, which may, however, be probably taken at about	5,000
Making a grand total of the forces on the Danube of about	60,000

There is no information as to the present condition of the Fortress of Silistria[*]; but, judging from analogy, it is to be presumed that it also has not been put into a good state of defence, and fully provisioned. Its position known on the right bank of the Danube, without any *tête du pont* or work of

[*] A report has since been received from Major Russell, from which it appears that Silistria is in much the same state as it was in 1854, in which case the defence cannot be long protracted, the place and the communications with the outworks being assailable by rifled artillery from the Roumanian bank of the Danube.

defence whatever on the left or Wallachian bank, renders it peculiarly open to attack by Artillery fire within easy range from the opposite side of the river. The garrison also, not being organized as a moveable column, would be easily invested, when the value of Silistria would be measured by the force required to contain it, which, probably, considering the difficulties of the country, would not be greatly in excess of the garrison, and the more so because the investing force will be well provided with Cavalry.

In second line are the fortresses of Schumla, Pravadi, and Varna.

Schumla, which is situated in a hollow on the east side of a hill some 600 feet high, standing out in front of and detached from the Balkan range, is of importance only from a military point of view as an entrenched camp, from which an army might operate on the flank or rear of a force attempting to cross the Balkan range by any of the passes in its vicinity, and thereby endanger their communications. Lieut. Hare reports that it is only partially fortified at present, being practically open on the south and west; but the Turks pin their faith on their probable enemy being unable to attack from any direction but the east, and have devoted what little energy they have hitherto shown, in fortifying the place, to strengthen the eastern side.

The town is immediately surrounded by the remains of old earthworks thrown up in former wars, now useless. In front of them, from 400 to 600 yards in advance around the east side, are a series of small permanent works with revetted ditches, constructed after the war of 1828-9, and previous to that of 1853-6.

These works are so near the town, that since the introduction of rifled artillery, a series of exterior works have been designed by Bluhm Pasha (a Prussian officer for many years in the Turkish service) 3 to 5 miles in advance.

The position for these works appears to have been admirably chosen, but naturally its development is so great that several works are necessary to hold it. Of these only one, however, Besh Tépé Tabia, has been completed This is a formidable work, constructed on the latest German principles, armed with Krupp guns. A second work was commenced at Kasaplar, but has not been proceeded with. The defences along the crest of the hill to the west of the town have also been neglected.

Schumla contains several military establishments, including four large blocks of barracks, two stables, a new military hospital, and an old factory for gun carriages, a large field *gun shed*, a governor's house, two steam flour mills, &c., but apparently there are no stores, and the troops live on a system of requisition, as it were, from hand to mouth, and by begging or stealing. Lieutenant Hare states that the rice ration so dearly prized by the Turks has lapsed, and a ration of barley or wheat is issued instead. From my long experience with the Turkish troops this conveys as marked an impression of the great straits to which the Government are reduced for the supply of their army as any fact that has come to my knowledge.

The troops also are six months in arrears of pay, but notwithstanding this and the existence of much dysentery and typhus, there is no discontent; but on the contrary, an excellent spirit among the men, and complete confidence in the issue of war.

The troops are armed with new Martini-Henry rifles and fairly clothed. There is no military wheeled transport, nor even an ambulance wagon, the sick being carried to hospital on their comrades backs; but only a few Bulgarian pack ponies. Requisitions upon the country for arabas would, however, go far to supply this want, provided the army were not compelled to make long marches and had depôts formed at suitable points. It is probable, however, that the bad state of the roads has prevented the accummulation of stores at depôts, and also operates to prevent the concentration of transport animals. Lieutenant Hare experienced much difficulty in estimating the garrison, which he places at 7,000 to 8,000 men, but as the troops are constantly being sent to the front, he says Schumla may almost be regarded as a halting place between Varna and the Danube.

As to war material, he says the Turks are at present devoting their energy to the defences of the Danube, to which large amounts are forwarded, but no war material of importance has been brought to Schumla since the Krupp guns with which Besh Tépé Tabia is armed. Should Schumla be blockaded, or besieged, Lieutenant Hare considers starvation will be one of

the besiegers' weapons. He says the inhabitants have nothing; last year's crops were a failure, then came the insurrection, and the quartering of a large force living from hand to mouth on the country ever since. There is nothing to be found in the surrounding country in the shape of grain.

He adds, the Turks look upon the defence of Schumla as secondary to the fortresses on the Danube, but he was informed the probable number of the garrison in case of hostilities would be 40,000 men.

The conclusion which may be arrived at from this report on Schumla is that at most a battle might be fought on the exterior line of defence in which Besh Tépé Tabia would play an important part, but the unprotected intervals, several miles in extent, right and left of that fort, are so great that the garrison, if attacked by a superior force, would, throughout a great part of their front, be forced in upon the inner line, when their position, and that of the town, which being on the side of a hill, exposed within range of the assailants' guns, would be so difficult to maintain, that even the best troops could not be expected to hold out for a prolonged defence.

Varna, on the sea side, is situated at the eastern end of a valley, in which are the Devna Stream and Lake, the crests of the hills north and south being about 9,000 yards apart. Varna.

It is immediately surrounded by an old rampart which, notwithstanding the splendid defence it enabled the Turks to make in 1828, is now of comparatively small value.

To remedy its defects, and to prevent an enemy from occupying the heights, and thus obtaining complete command of the town and roadstead, a series of forts have been designed to crown the hills to the north and south, with batteries to fire on the roadstead.

Fort Jussuf Izeddin, to the north, has been in course of construction for 3 years, and possesses casemated accommodation for 600 men, but is in a very imperfect condition. About 1,000 soldiers are employed in placing it in a state of defence.

A second fort on the north (Fort Kestritch), is partly built, and had a working party of about 300 men employed on it.

The other works in the north are scarcely begun.

The works on the south side also are in a very imperfect condition, being near earthworks when visited by Captain Grover and Lieutenant Cockburn, with parapets 4 to 6 feet in height, and ditches of about the same depth.

These officers remark on the total want of system observed by the Turks in the construction of these works, without any regard to their relative importance, and also without persistence: works being begun and left unfinished without apparent cause; and others commenced in a most desultory manner without organization or proper direction of the working parties.

A number of rifled Krupp guns have arrived in the town (12 and 15 centimetres) but none are as yet mounted, and the carriages do not appear to have arrived. Varna being the terminus of the Schumla—Rustchuk line, troops and stores are disembarked there and forwarded on to the interior. 54 Krupp and 15 mountain guns arrived during the first week of February, of which 44 were destined for Varna, and 8 had been already dispatched on the 17th February by railway for Widdin, the route for which would be by rail to Rustchuk and thence up the Danube.

These officers estimate the garrison of Varna at 13,000 men, among whom are several battalions of Egyptians, who are reported as well clothed and armed, with an organized Commissariat Department, and who appear to be well cared for.

It is worthy of note that in the ranks of the Egyptians are to be found more than 200 Christians (Copts), and about 50 Jews.

According to the "State" given to Lieut.-Colonel Home, it would appear that the garrison was only about 8,600 strong, but this descrepancy may be accounted for by the arrivals, which amounted to 14,200 men in the first fortnight of February, and constant departures.

The actual strength of the garrison, however, is of comparatively small importance, except as an item in estimating the total Turkish force available for defence against invasion; as in consequence of the command of the sea being in the hands of the Turks, the garrison may at any time be re-inforced.

The reported condition of the works is, however, very unsatisfactory. A

vast amount of work remains to be done to place Varna in a defensible state, and so little energy is apparently being displayed that there is great risk, in the event of war breaking out in the spring, that it would be found in a very unsatisfactory condition, and almost untenable against a regular attack.

Pravadi. Pravadi, although it contains a garrison of 700 men, appears to have been totally neglected. The earthworks constructed in 1828-9 and 1853-4, are in a dilapidated condition. Its position—as being easily capable of defence, on the line of one of the main passes of the Balkan, and commanding the railway between Varna and Schumla, also as an intermediary link between these two fortresses—is of some military value.

It appears that the total Turkish force north of the Balkans, according to the State furnished to Lieut.-Colonel Home, is as follows:—

Varna	8,050
Schumla	7,800
Silistria	14,040
Rustchuk	6,460
Sistova	940
Nicopolis	800
Widdin	31,780
Total	70,420

According to reports furnished to Captain Grover it would appear that 22,000 men had proceeded to Silistria. This number would probably include the troops in the Dobrudscha, at Tultcha, and Isaktcha; and the garrison at Varna would appear to have been augmented subsequent to the date of the Return given to Lieutenant-Colonel Home, so that with the garrison of Pravadi 700 men, and 1,000 men at Rasgard, and probably other small garrisons, it might be safe to take the Turkish regular army north of the Balkans at not less than 80,000 men.

It does not appear whether there is any force, and if so what number there may be in some of the more important towns in the interior where it is reasonable to suppose that troops might be cantoned so as to turn the resources of the country to better account for feeding them; but it may, I think, be safely assumed that in the middle of March, the whole force north of the Balkan does not come up to 100,000 men: that it is weak in artillery, ill-found in transport, devoid of hospital accommodation and arrangements for the care of the sick and wounded, and with no large stores of provisions collected for their support.

Of this force over 60,000 are distributed along the Danube, one-half of whom are at Widdin, about 240 miles from Silistria; while about one-fourth are stationed at Silistria or in the Dobrudscha.

If the Russians cross the lower Danube in force and push on energetically, having their advance covered by a large cavalry force, capable of rapid movement, the garrison of Silistria will be invested, the defences of Rustchuk turned, and the garrisons of Varna and Schumla paralyzed, before the force at Widdin could be brought to oppose the movement.

The concentration of the Turkish army would be prevented, the railroad from Rustchuk secured, and with it the whole country north of the Varna—Schumla line. The chief difficulty of the Russians, as observed in previous memoranda, will be the provisioning of their army, towards which it would appear from Lieut. Hare's report—there can be but few resources left in the country itself. As the spring advances, the difficulties will be somewhat diminished as the grass and grain crops will, in great measure, support the cattle; but if the Turks should be able to show a solid front, so as to compel the invaders to mass their forces, these difficulties will be greatly enhanced.

The risk, however, seems to be that, owing to the too great dispersion of the defenders on the line of the Danube, and the attempt to hold that line by permanent defences, the invaders may advance so rapidly that they will overrun the country north of the Balkans, and possibly even reduce Schumla, before an adequate force could be concentrated to oppose them. The Turks would then be compelled to concentrate what would remain of their army in haste to the south of the Balkans, where they will arrive more or less exhausted, and enfeebled, by long marches; undertaken with feeble means of transport, through a difficult country, and probably without adequate stores of provisions for their

sustenance while on the line of march. In this case, however, the branch railway to Jamboli from the Constantinople—Phillipopolis line will be of material assistance to them, for bringing up supplies to the neighbourhood of their point of consideration.

Having thus detailed what seems a not improbable result to be expected on the opening of a campaign, it is useless to speculate as to its further progress, which must depend on the manner in which operations are conducted on both sides. I would merely observe that Lieut. Hare's report of the condition of the country, as regards the supplies of provisions to be found in it, tends to show that the Russians, in the absence of naval means, will have great difficulty in supporting their troops in a march across the Balkans. Abundant supplies of grain, and especially maize, will, however, be found in Roumania; the crops of each season, being in great measure exported in the spring following, are still in the country. As a preparation for coming events the Russians are reported by Captain Anstey to have laid in a large store at Kalul, about 20 miles west of the Pruth, and it is not impossible that they may have laid in similar stores elsewhere. But notwithstanding these supplies, and even assuming that the Turks do not take proper means for closing the Varna—Rustchuk Railway before the Russians seize it, they will still have to overcome great difficulties in feeding their troops, by the bad roads which traverse the mountain range, and which will cause delays and, in all probability, a halt, to permit of depôts being formed before any considerable force is pushed across the mountains. Much, however, will depend upon the issue of the struggle north of the Balkans, and whether the Turks have sufficient foresight to concentrate their forces in time to oppose the advance of their enemy.

The probable object in keeping so large a force in Widdin is to repeat the operation of 1853, when a division crossed the Danube and occupied Kalafat immediately on the passage of the Pruth by the Russians. This division fought a gallant action against a Russian division sent to attack them, and defeated it, after which the garrison at Widdin joined the army, which was massed by Omer Pasha in front of Schumla; but on that occasion the Russians sat down before Silistria, and so time was given for the concentration. The probability, however, in the event of a war occurring now, is, that the Russians acting on the principles which were so eminently successful in the Franco-German war, will pass Silistria and the other fortresses on the Danube, so that the troops in and near Widdin will be unable to unite with the other troops north of the Danube, even if they can be spared from the neighbourhood of Widdin, where possibly they may be required to keep the Roumanian army, or a Russian detachment, in check and prevent it from operating on the side of Servia.

These considerations tend to prove that the Turkish field army opposed to a Russian advance will be comparatively small, being reduced by the garrisons of—

Widdin	31,780
Rustchuk	6,460
Silistria	14,040
Varna	9,500
	60,880

and a further deduction for Schumla, the garrison of which may, however, operate in the field in advance of that fortress with a possibility of retiring into it.

It may be interesting in this review to endeavour to estimate the strength of the Russian invading army according to the most recent and best information available. Both Lieutenant-Colonel Wellesley and Captain Anstey, R.E., reports that the following corps are concentrated on the southern and eastern frontiers of Russia, under the command of His Imperial Highness the Grand Duke Nicholas, with General Nepokoitchistski as Chief of Staff, and Colonel Labritzki, Professor of Strategy in the Military Staff School at St. Petersburgh, as his assistant.

7th Corps at *Odessa*.—Lieutenant-General Barclay de Tolly Weimarn in Command, but who has been lately ordered to take command of one of the corps forming at or near Moscow.

8th Corps at *Bessarabia*.—Lieutenant-General Feder Radetzki, born 1820.
9th Corps at *Bessarabia*.—Lieutenant-General Krüdener, born 1811.
10th Corps at *Crimea*.—Lieutenant-General Prince Woronzoff, born 1822.
11th Corps at *Bessarabia*.—Lieutenant-General Prince Schaxowski, born 1812.
12th Corps at *Bessarabia*.—Lieutenant-General Vanowski, born 1822.

The 8th, 9th, 11th and 12th Corps constituted the Army of the Pruth.

It is to be observed that according to the recent organisation of the Russian army it is only organised in peace time in Divisions, so that the nomination of General Barclay de Tolly Weimarn to the command of a corps near Moscow, as reported by Captain Anstey, R.E., indicates that a further preparation for war was proceeding within the last month.

According to the report of Lieutenant-Colonel Wellesley, the Military Attaché at St. Petersburgh, and the "Armed Strength of Russia," translated by the Intelligence Department, each corps is composed of—

	Combatants.		Guns.
2 Divisions of Infantry	23,000	..	..
2 Brigades of Field Artillery	3,000	..	96
1 Division of Cavalry (16 Squadrons)	2,532	..	..
2 Batteries of Horse Artillery	600	..	12
	29,732	..	108
Or say	30,000		

	Combatants.		Guns.
The 4 Corps of the Army of the Pruth therefore comprise	120,000	..	432
In addition to which there are the following troops not attached to Corps, but under the direct orders of the Commander-in-Chief:—			
Escort of Commander-in-Chief (4 Squadrons)	625		
2 Companies of Kuban Rifles	416		
4th Brigade of Rifles (Major-General Zvietzinski)	3,344		
3rd Brigade of Sappers:—			
3 Battalions	3,087		
4 Pontoon Half-Battalions	1,696		
4 Field Telegraph Parks, with 266 miles of wire.	100		
Sappers of the Guard	1,000		
1 Battalion for construction of roads.	5,883		
3 Companies of Sailors	600		
4 Sotnias of Terek Cavalry Militia	600		
2 Batteries Mountain Artillery	400	..	12
10 Regiments of Don Cossacks (about)	5,000		
7 Batteries of Cossack Artillery	1,750	..	42
Total Combatants	139,218	..	486

besides a large park of 400 guns in course of formation at Bender.

The 7th Corps, at Odessa, and 10th Corps in the Crimea are formed into an army of observation under the command of Lieut.-General Semeka. They are of similar constitution to the other corps, and comprise therefore 60,000 combatants, with 216 guns.

The total force of combatants, therefore, is 199,000, or say 200,000 men, with 660 guns, of which there are—

Infantry	141,750
Cavalry	27,350
Artillery	5,883
Engineers	600
Sailors	600
	197,000

In addition to the above there are—
12 Flying Artillery Parks ..
12 Mobile Artillery Parks ..
5 Horse Artillery Parks ..
} Attached to Corps.
14 Sections of Mobile Commissariat of 350 men each.

Artillery Reserve for repairs and depôts for projectiles and powder, with workshops and laboratory.

These Transport Corps and adjuncts of the Army will probably bring the total number of men up to about 250,000.

The 10 regiments of Don Cossacks, with their batteries, are reported by Lieut.-Colonel Wellesley to be cantoned along the line of the Pruth, some of them within 8 or 10 miles. The head-quarters of the various divisions are also reported to be stationed as shown on the accompanying sketch map.

ARMY OF PRUTH.

Corps.			Head-Quarters.	
8th	9th Infantry Division		Tiraspol	On the Jassy—Odessa Railway.
"	14th " "		Kisinev	
"	8th Cavalry "		Bjeley.	
9th	5th Infantry Division		Winnica	On the Odessa—Kieff Railway.
"	31st " "		Balta	
"	9th Cavalry "		Tiraspol	On the Odessa—Jassy Railway.
11th	11th Infantry Division		Turatinskaja.	About 50 miles in advance of the Jassy — Odessa Railway, on the road to Ismail, and 30 miles from the Roumanian frontier.
"	32nd " "		Novo Raskany	Near the Jassy—Odessa Railway.
"	11th Cavalry "		Dubossory.	
12th	12th Infantry Division		Kalarash	On the Jassy Railway, 36 miles from the Roumanian frontier.
"	33rd " "		Orgeiow	About 15 miles from the Jassy Railway.
"	12th Cavalry "		Soroki.	

ARMY OF OBSERVATION.

Corps.			Head-Quarters.
7th	15th Infantry Division		Odessa and Otchakow.
"	36th " "		Akerman.
"	7th Cavalry "		Odessa and Gora Tchelegin.
10th	13th Infantry Division		Sevastopol.
"	34th " "		Khorson.
"	10th Cavalry "		Eupatoria and Kabatschak.

The probability is that the position of these corps has been determined with a view to bringing them as near as possible to the frontier, while maintaining them near the railway to facilitate supply, and the cavalry in favourable positions for forage; but it would indicate also that the first corps to cross the frontier will be the 11th and 12th, who would probably enter Roumania within three days of the order being given for them to move, the former marching on Bolgrad, the latter on Jassy, followed by the 8th Corps marching, leaving the railway free for the transport of the 9th Corps, so that the whole four corps would certainly be within the Principalities within a week, with their advanced guard on the Sereth and Danube, and the 7th Corps well closed up in support.

Some of the cavalry are so close to the frontier, that being unopposed, they might cross it on the same day they receive their orders to move.

Captain Anstey counted 137 pontoon wagons at Kischineff, so that everything is prepared for a rapid advance, followed by an immediate passage of the Danube, and when the relative forces of the opponents are considered as stated

in these reports, there can be little room for doubt that, notwithstanding the good fighting qualities of the Turkish soldiers, they will be outmanœuvred, and shut up in their fortresses of Silistria, Rustchuk, Varna, and Schumla, with the intervening country in entire possession of the enemy, within a very few weeks of the opening of the campaign, and this even if the Turkish army were 150,000 strong instead of 100,000, as assumed at the commencement of this memorandum.

The foolhardiness of the Turks in risking a war single-handed under such circumstances is inconceivable. The Russian army, being prepared, can strike this blow before any of the other powers could bring a man into the field to oppose them. It is true that a hostile demonstration on the part of Austria, by the concentration of a force in Transylvania and the Bukovine would place the Russian army, after it had struck the blow, in a very precarious position, but the preparation of additional corps at Moscow and in the interior would show that the Russians are aware of the danger, and are preparing the means for guarding against it.

J. L. A. SIMMONS.

19*th April* 1877.

NOTE.—In Inclosure 3 in No. 303 of the despatches of H.M.'s Chargé d'Affaires at Constantinople, dated 16th March, Colonel Lennox gives a rough distribution of the Turkish force available in Europe for war as follows:—

	Battalions.	Men.
About Widdin	78 ..	54,600
Rustchuk	14 ..	9,800
Schumla	25 ..	17,500
Varna	19 ..	13,300
Silistria	21 ..	14,700
Dobrudscha, &c.	24 ..	16,800
Total, north of the Balkans	181 ..	126,700
About Sophia, &c.	36 ..	25,200
Other places in rear of Balkans	9 ..	6,300
	226 ..	158,200

The battalions are averaged at 700; and the total force of cavalry, field and garrison artillery, are taken at 12,000, making a total force of 170,000 men out of which garrisons for the defence of the fortresses must be taken.

This shows a great deficiency, and consequent weakness in cavalry and artillery. It also shows that after deducting garrisons, the field army north of the Balkans, including the garrison of Schumla, does not exceed 35,000 men.

J. L. A. SIMMONS.

19*th April* 1877.

No. 31.

LONDON,
24*th March* 1877.

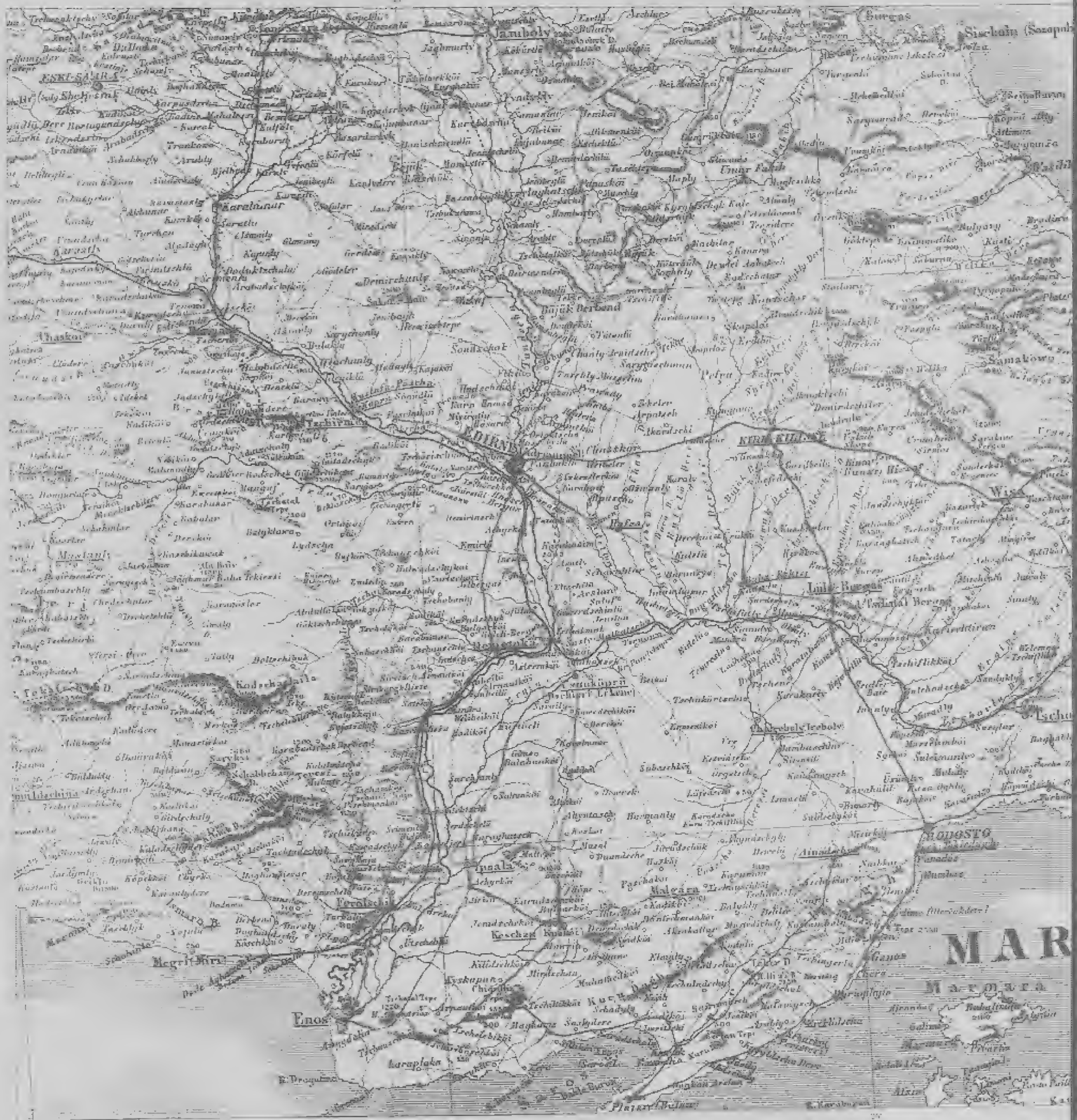
Sir,

MY letter, No. 20, contained full reports on the Dardanelles and their importance, so far as British interests are concerned; my letter, No. 19, contained a report on the road from Constantinople to Gallipoli; and my letter, No. 22, contained reports on many of the roads in Rumelia.

I now forward several reports, which bear an intimate connection with those I have just referred to.

An examination of the map of Turkey shows, that if a Russian Army having occupied Adrianople, attempts to move to the eastward, it will expose both flanks to an enemy commanding the sea.

FROM KIEPERT'S MAP OF TURKEY



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KIEPERT'S MAP OF TURKEY

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The Gulf of Enos, at the head of the Egean Sea, the Valley of the Maritza, and the railway that runs from Dedé Aghatch to Adrianople all appear to point to Enos as a place of considerable importance, as affording a base for an army disembarked to act on the Russian right flank, and so relieve Constantinople from any danger that might menace it.

The apparent advantages of Enos have struck several persons, and the Marquis of Salisbury called on me to furnish him with information as to this place on several occasions.

Forming an opinion on the Admiralty Chart, I did not consider that Enos was a place of any real importance; yet, as many persons held different views, I considered it advisable to have the place reported on, and information as to the probable line of advance of an army, landed at the head of the Egean Sea, and operating against Adrianople, obtained.

I accordingly detailed Lieut. Chermside, R.E., for the purpose.

I have the honour to submit the following reports prepared by that officer:—

No. I.—Report on the road from Gallipoli to Enos, with road sketch.
No. II.—Report on Enos, with a sketch of the place. This report deals fully with the question above referred to, and confirms what the Admiralty Chart indicated, namely—that Enos is unsuited for a landing place.
No. III.—Report on Dedé Aghatch, the present terminus of the Adrianople line of railway. This place is really an open roadstead, but there are few or no shoals, and it affords a fair landing place for an army.
No. IV.—Report on the road from Enos to Adrianople, *via* Ipsala and Usunköpru, with sketches.
No. V.—Report on the road from Enos to Adrianople, *via* Keschan, with sketches.
No. VI.—Report on the cross road from Keschan to Ipsala, with sketch.
No. VII.—Report on the the City of Adrianople, with a rough sketch, and report on positions to cover it.
No. VIII.—Report on the road from Adrianople *via* Kirk Killissi to Tchatalaja.
No. IX.—Report on the road from Enos to Adrianople *via* the ferries across the Maritza, Kalderkos, Demotika, &c.
No. X.—Report on the River Maritza from Adrianople to the sea.
No. XI.—Report on the railway from Adrianople to Dedé Aghatch
No. XII.—A detailed statement of the state of the roads in the Vilayet of Adrianople.

In forwarding this mass of information, I beg most respectfully to draw your attention to the great exertions and unwearied labour which has attended its collection. Lieut. Chermside was alone, in a strange country, in exceedingly bad weather, and I think these reports reflect the highest credit on him. They will be of enormous value should an army ever, having disembarked at the head of the Egean Sea, attempt to march on Adrianople.

Such an operation is undoubtedly a feasible one. But so long as the Bosphorus is open to a country capable of making such a disembarkation, I submit that Varna is the place from which the blow should be aimed at the Russian communications, rather than the head of the Egean Sea.

Should, however, Constantinople be in hostile hands, and the Bosphorus closed, there may be circumstances under which such an advance would be advantageous.

I have the honour to be,
Sir,
Your most obedient Servant,
R. HOME, *Lieut.-Colonel, R.E.*

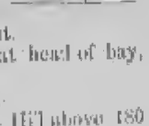
The Inspector-General of Fortifications.

PUBLIC RECORD OFFICE, LONDON

Inclosure 1 in No. 31.

No. I.—REPORT ON TRACK FROM GALLIPOLI TO ENOS.

Route traversed and examined on January 15th, 16th, and 17th. January 15th, gale and rain all day; 16th, ditto; 17th, ditto, and sleet and snow.

Distance: Intermediate miles.	Distance: Total miles.	Distance: Total hours.	Name of Place.	Remarks.
				Gallipoli.
			Gallipoli ..	The statistics as to inhabitants, commerce, &c., of this port have been furnished in another report. The surrounding hills that command the landing-places, within artillery range, are low and exposed (see sketch 4 in. to 1 mile). Road descends and skirts small bay. Fountain right of road; road leaves plateau, descends into low ground, swampy in winter, and becomes rough, paved causeway in bad repair, hardly passable for heavy artillery; two streams, both rather deep and sluggish, with steep banks, 20 to 30 feet across; wooden bridges, good order; country on both sides of road impracticable for wheel traffic in heavy weather.
1	1	..	.. ..	
2	2	..	.. ..	
3	3	..	.. ..	
3¼	3¼	..	.. ..	
3½	3½	..	.. ..	Small stone bridge or culvert, good order; road ascends hill, gradients 4° to 6°, road unmetalled, small wooden bridge over watercourse, fair order. Road becomes track, which runs along the ridge with easy gradients. Two large tchiftliks 1½ mile to left. Track passes through the central work of Bulair lines, height 510 feet.
4	4	..	.. ..	
4½	4½	..	.. ..	
5	5	..	.. ..	
7	7	..	.. ..	
9¼	9¼	2.35	Bulair ..	Large village, population Greek and Turk—houses, 360. Water supply—excellent fountains, numerous wells (see sketch 4 in. to 1 mile); height, 360 feet, statistics in report. Two very large stables, room for 100 horses, probably stabling in village for 200 to 250 horses. Track to this village from Gallipoli is in wet weather excessively heavy; it passes for first 4 miles over low fertile cultivated ground; at 4½ miles it has risen on to a ridge, part down, part cultivated, varying from 460 feet to 510 feet; at seven miles it commences to descend gradually to Bulair; commands view of both seas in places. A four-wire telegraph, with A posts all along the more exposed portions, follows the general direction of the track. No stone for formation of road in immediate neighbourhood of track.
1	10¼	..	.. ..	Cross stream, Souyuk Déré, flooded, 4 ft. 6 in. deep, 20 ft. across in places; small slab stone bridge, good order, 10 ft. to 14 ft. wide, easily repairable if destroyed. Track to right to Ekamili, branches just before bridge and track to left, also to Kawak, but of lower level.
2¼ to 3½	..	..	.. ..	Track skirts wood of oak and thorn scrub.
4½	..	..	.. ..	A large farm (stone) ½ mile to right, Kiratchiftlik, mill on Ecsamite route
5	..	..	.. ..	Fountain on left-hand track.
5½	..	..	.. ..	Rise from low ground, soil sandier cross stream, deep ravinelike bed, track on both sides, scored and bad, deep cut into sand by water action; stone bridge, very strong abutments, span, 4 ft. to 5 ft. only. A 20-ft. gap would require to be bridged, difficult to make; good order.
6	..	..	.. ..	
7½	..	..	.. ..	Commence descent. Bulair shut out.
8	..	..	.. ..	Fountain. Salt works in marsh at head of bay, 500 yards to left.
9¼	..	..	.. ..	Fountain. River 200 yards to left.
9½	18¾	5.55	Kawak ..	Village on northern slope of spur. Hill above 180 feet, two lower knolls towards sea. This eminence is on a ridge forming the strong and important flank of an advanced position, to hold the Gallipoli Peninsula, and rests on the river and sea, the former also protect-

Distance: Intermediate miles.	Distance: Total miles.	Distance: Total hours.	Name of Place.	Remarks.
				ing its front. A perfectly clear frontage for some miles, over flat marshy ground. Turkish village of 70 houses. Water supply always abundant.
				The track from Bulair is the ordinary unmetalled route of the country, and for the first 4½ miles runs over a light clay soil, off which the surface water runs readily. After the rise, some 5 miles out, the soil is sandy, and although there are several bad places at watercourses the track is, generally speaking, very good. Near Kawak it branches, one branch going up the hill, and the other round its base in heavier ground; gradients good throughout. After crossing the Souyuk Déré, it runs for the rest of the way along the base of the high hills, with the sea at hand on the left; it is, therefore, commanded by the hills and exposed to the sea throughout. The hills, being of gentle contour, with few crags, ravines, and for the most part accessible to cavalry, are not suitable for the harassing of an enemy's advance by small parties. A four-wire line of telegraph follows the general direction of the track and branches at Kawak; three wires to Keschan; one wire to Slimkeui. The Rodosto track leaves the Enos track here; the Malgara track branches at the bridge, one mile from the village.
¾	19½	..	.. ..	Across marshy land, first of two small stone bridges, in good order.
1	..	..	.. ..	Crosses river by stone bridge, four arches, two 24-feet to 30-feet spans, roadway 15 feet to 20 feet, parapet insignificant, good order; weir just above bridge; stream (much swollen in floods) 2 to 2½ miles per hour below weir, more sluggish below. River, 80 yards wide just below bridge, 150 yards down it narrows to 50 or 60 yards, and there is a shoal in the middle, easy to be bridged; fordable here in ordinary weather; mill at bridge, banks sandy and muddy, 3 feet to 6 feet. Caïques ascend from the sea to Kawak. Track to Malgara to left.
3¼	..	..	.. ..	Still marsh. Low isolated hills to left, low spur from Kurn-Dagh mountains to right. Village of Kadi-keui (Turkish), 140 houses, 2 miles to right another Turkish village (Kesili) is reported to lie beyond it, at about 3 miles distance from both, in poor country, sea some 2 miles to left. Marsh, part cultivated, part ponds and swamp.
4¼	..	..	.. ..	Cross stream (about 20 feet), fordable at all times.
4½	..	..	.. ..	Stream, stone bridge, one arch, roadway 10 feet to 14 feet, arch 12 feet in the clear, difficult to repair, good order, banks steep, water 6 feet deep, stream flooded.
5	..	..	.. ..	
5½	..	..	.. ..	Cross stream (about 20 feet), fordable.
6	24½	7.55	Khojajiuch	Sea 500 yards to left, low sandy coast.
				Circassian Village. 15 mud and stone-tiled houses, remainder thatched houses, 80 inhabitants, in flat country, 1 mile from spurs of Kurn-Dagh.
150 yds.	..	..	.. ..	Track from Kawak of good surface and sandy, but liable to inundations. In dry weather it must form an excellent natural road. Telegraph follows its general direction for 3 miles from Kawak.
150 yds.	..	..	.. ..	Stream about 20 feet, steep banks 4 feet to 10 feet. Difficult to cross in floods, rude wooden bridge. Useless. Trees handy.
500 yds.	..	..	.. ..	Streams only just fordable in heavy rains, banks steep, cut down at ford.
1	..	..	.. ..	Tadili, Turkish village, said to be 1 mile to right at base of spurs of Kurn-Dagh (visible from track when fine), reported poor.
3	..	..	.. ..	
3 to 4½	..	..	.. ..	Reach first spur of Kurn-Dagh, after passing across a rushy plain, crossed four or five mountain streams, almost always fordable in rainy [illegible] but water up to 3 feet deep. Gnarled and stunted fir timber in abundance.

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Distance.			Name of Place.	Remarks.
Intermediate Miles.	Total Miles.	Total Hours.		
4½	29½	9.25	Karadjali ..	Greek village, 60 inhabited houses, about 80 buildings in all, two mills, 200 inhabitants, agricultural. Only corn enough for consumption of village grown. 8,000 okes wheat, 6,000 okes barley, water supply always good. Regular stabling for 20 horses only, no horses. Track from Khojajismoh is mostly over sand, and of very good surface, except where cut into by streams. For three miles it is almost level and after reaching the spurs, it runs parallel to the sea, about half a mile from it, sea on left and mountains on right. Low cliffs above sea. After three miles it is over wooded spurs of mountains, no gradients over 3° to 4°. The fir timber is stunted and gnarled, and no trees of any value are found near the track, or in easily accessible places. At Karadjali there is a break in the mountains, and a cultivated valley, with a gentle slope to the sea, and a small, but exposed bay. Height of village 200 feet, across spur from Karadjali Valley, sea on left, track stony, spurs more thickly wooded.
1,800	2¼	..	.. ..	
2½	27¼	..	.. ..	Valley. Mountain stream, stony bed, 40 feet across (much swollen), low banks, fordable. Village on spur 1,200 yards to right. Sasli Déré, 40 houses, 140 inhabitants, Greek, 1 mill (visible), water supply reputed good. Valley flat and cultivated, best track for wheel traffic turns to right, up Valley, and passes through village.
¾		..	.. ..	Narrow valley, mostly wooded, several smaller ones leading into it, track rocky, gradient 6½° for 50 to 100 yards. Mountain stream, 30 to 40 feet (in spates). Sea 150 yards left, and small sandy bay.
1	..	..	.. ..	Watercourse, ravine.
1¼	..	..	.. ..	On spur 250 feet above sea, last 1½ mile thinly wooded, bare patches of down. Track turns to right, up Valley, to Mugharis, leaving coast line which bends in W. direction (253° true) to promontory, some four miles distant, just to the E. of which lies a small well sheltered natural port, at a place called Kratchi. There is room for two or three ships up to 500 tons, the water is, however, too deep for it to be increased in size. No village. Used for exporting the agricultural produce of the Keshan district that does not find its way to Enos, and also lately it is said for export of fir timber (probably for firing). The track to it is said to pass near Tchilti-keui.
3	..	..	.. ..	Mill to left on Mugharis stream.
3½	..	..	.. ..	Mountain stream, swift and stony.
6	..	..	.. ..	Mountain stream, stones and boulders.
				Steep banks.
				These three streams run into the main stream of the Mugharis Valley, all are fordable, but the main stream runs through a ravine or chasm. Track skirts this, and is in some places dangerous.
6½	35¾	11.15	Mugharis ..	Greek village, 100 houses, 500 inhabitants. Height, 180 feet. Poor. Water supply good, but little cultivation near, 50 to 100 okes per head of wheat, according to season, and about ¼ that amount of barley. Few cattle, no horses, 1 mill. Stabling for 8 horses, at Khan, probably for 20 to 30 in village. From Karadjali to Sasli-Dere the track is very good, rocks in places would require blasting; it is of sand, good surface throughout, and nowhere under 10 feet wide, and capable of being easily widened. It follows generally the contours of the hills. The gradients are good, none over 4°. The track for wheel traffic from Sasli-Dere to Mugharis, is at a higher level than that described. It is more circuitous, is described as avoiding steep gradients, and as being of good surface and width, it passes the streams by fords, and is from 1 to 1½ miles longer. The track from beyond Karadjali to Sasli-Dere, and both from there, are along the southern slopes of wooded mountains, are completely commanded throughout, and exposed to the sea, but difficult to destroy.

Distance.			Name of Place.	Remarks
Intermediate miles.	Total miles.	Total hours.		
½	31¾	..	.. ..	Rare hill, track rough and stony, gradient fair.
1½	..	..	.. ..	Fountain, descending hill, fir wood begins.
1¾	..	..	.. ..	Stream, 40 feet, steep banks, and thickly wooded. Fordable in floods (2 feet to 3 feet 6 inches, stony bottom, very swift), bridge required for passage of artillery, trees at hand, or bank to be cut down.
2¾	..	..	.. ..	Stream (30 to 40 feet), low banks crossing spur between.
3	..	..	.. ..	Branch track to Keshan *via* Karli-keui, latter distant 3 hours, a rich Greek village of 130 houses, wood-ends.
4	..	..	.. ..	On plateau (610 feet), wood (sparse fir) re-commences.
4½	40¼	13.5	Tchiltikeui..	Tchiltikeui, a Greek village, situated at the head of a long cultivated valley, extending to the sea (180 feet). 60 houses, 2 mills, 100 oxen and buffaloes. Water good, rills through village. A good deal of cultivation near. Track leads hence to Kara Tepe, a Greek village on the slopes of the hill of that name. 40 houses. Distant, 2 to 3 miles.
				Track from Mugharis rough, but for most part of hard surface; one or two deep places and bad bits at streams. With a very moderate amount of labour it might be much improved. It passes through wooded table-land, intersected by streams and valleys. The surrounding country (not seen in the storm) is said to be of similar nature.
				On leaving Tchiltikeui, track, turning to left, follows a brook, which it twice crosses, and at 1 mile, a second watercourse. Here it turns to the right, and descends, by a gentle gradient, into a valley. Flat from Kara Tepe joins the Tchiltikeui valley below.
1	41¼	..	.. ..	Stream, 25 feet to 30 feet, low banks. Enter swampy and flooded plain. Cultivation and marsh.
2	..	..	.. ..	Swollen stream, 4 feet deep in floods, soft bottom, difficult to pass, no banks.
2½	..	..	.. ..	Slight rise, low projecting spur. Plain ends at foot of spur or range, perpendicular to direction of track.
4	..	..	.. ..	Stone bridge, good order, 10 feet to 15 feet roadway, arch 12 feet span, 10 feet above water. Banks vertical, 10 feet to 20 feet. Bridging material at hand. Worth destroying.
4½	..	..	.. ..	
5¾	..	..	.. ..	
0	46¼	15.5	Saludja (Turk), or Fakirimar (Greek).	Greek village, 80 houses, 30 inhabitants, 40 oxen, 40 arabas, 4 mills. Well off, and a good deal of cultivation near, at beginning of richer country. Stabling for 50 horses. Height, 600 feet. A good deal of charcoal made here.
				Track, for 2 miles from Tchiltikeui, of good gradient, and over a hard soil. It then enters low plain, and in winter, or in wet weather, is muddy and heavy. At rise from plain (1½ miles), the soil again becomes sandy, the track good (traces of old paved road), the country is more open, the valleys wider and more cultivated, trees or scrub on the hills.
				The village of Saludja is situated very high (the hill on which the mills stand is 700 feet). A good view is obtained thence over the whole country, forward and back. Kara Tepe and Tchiltikeui are visible, also the sea. It can always be ascertained here if the roads from Enos are practicable, as it is only 3 miles from the edge of the inundations that periodically cover the whole extent of the ancient Gulf of Enos; and, if the floods are out here, only the one track forward, and tracks between it and the sea will be practicable either to or from Enos.
1	47¼	..	.. ..	Descending spur, very easy gradient down, and scrub low scrub on hills on both sides.
1½	..	..	.. ..	Stream, deep cut into sandy soil. Boulders in bed,

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				bed 50 feet to 60 feet across. Stream usually only 20 feet to 30 feet.
2	..	..	.. ..	Along bases of low spurs, crossing two brooks and one stream, insignificant banks, all liable to floods.
3	..	.	.. ..	Turn to right, conical hill 1,000 yards in front.
3½	..	..	.. ..	Swampy valley, scrub sparse, single pollard trees, oak, &c. (50 feet).
4	..	..	.. .	Col (250 feet). Wood as before.
4½	..	..	.. ..	Rivulet. Trees alongside, 2 feet to 3 feet in diameter, pollard.
5	..	..	.. ..	Small stream, stony.
5¼	..	.	.. ..	Stream, rocky and sandy. High banks far side. Bed 60 feet, stream 20 feet to 30 feet. Turns to right below, and runs through gorge, up which comes track from Keschan, and one wire and telegraph from Keschan to Enos.
6	52½	48¼	Tchélebikeui .	A Greek village, 100 houses, 1,000 kiles of barley, 1,500 kiles of wheat (average yield), 25 arabas, 40 oxen, 2,000 sheep and goats in pastures around, 1 mill, horses scarce. Stabling at khan for 12 horses, probably for 30 to 40 horses in village. Water always good. Height (400 feet). Much scrub in neighbourhood. Charcoal largely manufactured; transported in arabas. To the S., distant ¾ of a mile, is Khojali (believed to be Turk, statements differed), a village of 140 houses. Rivulet in village, good water supply, 8 mills.
				The track from Saludja descends, with very easy gradient, for 1½ miles to a valley. It is bad, as usual, on leaving the village; of good surface thence to valley, where it is low lying and heavy. It here turns, first to left along spurs, and thence to right, and, at 4½ miles, passes over a col into a cultivated valley, rising very gradually to Tchélebikeui. Here, owing to cultivation, it is not good. The hills on the left are immediately above it, those on the right at some distance, scrub-covered and intersected by ravines, though of gentle slope, and beyond, a 20-foot stream, with deep bed. It is possible to move through the scrub in this country with comparative ease.
	49	..	.. ..	Track to right to village of Alvanitis, or Arnaut-keui, distant 1 hour, equal 3½ miles. Track to left to Khaï-keui, a Turkish village of 30 houses; reputed distant ¼ hour, not visible.
	..	..	.. ..	
	..	..	.. ..	Along scrub-covered ridge track leaves watershed on left, and descends to Kimerli, a Greek village of 64 houses. 1,200 yards right, among fir-sized trees, Turkish village of Khrischim; 30 houses; said to lie ¼ hour to left.
	..	..	.. ..	
	..	..	.. ..	Stream (sand and stones), sandy banks, 1 ft. to 2 ft. deep, 90 ft. across. When the ford is not passable there is another about a mile up stream, best route to which is from Tchélebi-keui, through Kimerli. Across stream one track runs direct to Tchiribasch-keui, through scrub and cultivation; and the best for wheel traffic turns to left along valley, mostly grass, with abundance of single pollard trees, mostly oak.
				Turn to right, leave valley.
	53½	16·45	Tchiribasch-keui.	Turkish and Circassian; 80 houses; poor. Good water-supply; excellent fountain and horse-trough just beyond the stream.
				Track heavy leaving Tchélebi-keui, runs along the N. slope of scrub-covered hill, and thence along a level ridge for two miles, where it is sandy and good. Entering valley at 3½ miles it has a steep gradient of 4° to 5° for some way. Here tracks branch as described; that in the valley, though of easier gradient, is in wet weather deep. At 4¾ miles it leaves this long valley, cultivated in parts and extending almost in a straight line to the sea, the hills on either

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total hours.	Total miles.		
				side having on them abundance of brushwood and indifferent timber, and rises over ridge to Tchiribasch-keui.
1¼	55	..	.. ..	Kutchuk Jasori, or Jasioren, Turk; 20 houses. One mile to left, and just to right of track, Omurbei; Turk; 15 houses. Both in high-lying cultivated valley. Small stream (mountain) in floods. Better ford by passing through Omurbei. Across cultivated plain to col (280 ft.), where commences a gentle descent. Country open, mountainous to right. Two miles distant, on rock in mountains, Greek monastry of Skaloti (three monks, a few retainers), a large stone building, capable of strong defence (visited).
				One mile to left, Buynk Jasioren, a Greek village of 20 houses. Rich village in cultivated country.
				Mountain stream; steep banks 150 ft. across; remains of bridge discernible. Swift; stony; 3 ft. deep; steep banks.
4	..	..	.. ..	Col (280 ft.) Enos visible. Enter vast cultivated plain, sloping almost imperceptibly seawards from foot of mountains. Woods near shore; plain dotted pollard trees, mostly oak. Monastry of Skaloti 1¼ miles right.
4¼	..	..	.. ..	Amygdaka (Greek), or Tchausch-keui (Turk), large Greek village, 400 yards right; 90 houses, 60 arabas, 200 oxen, stabling for 40 to 50 horses. High mountains immediately above to right. Water-supply always good; several wells; rivulet through village.
5½	..	..	.. ..	Track skirts village of Jeni-keui (Greek); 100 houses. Richly situated, like last village. Excellent fountain on track. Brook track touches spurs of mountains. Fountain. Monastery of Pantaleone visible to right. One mile distant, at mouth of gorge, in mountain spurs, on low ridge, shallow valley, 600 yards right.
7	..	..	.. ..	
8	..	..	.. ..	
9½	..	..	.. ..	Salt lake to right.
10	..	..	.. ..	Crossing low swampy neck of land between Mariza River and the salt lakes, ½ mile across.
10½	64½	19.05	Enos ..	On to peninsula and up slight rise to centre of Enos.
				Leaving Tchiribasch-Keui, the track dips, and after gentle rise, runs along a flat valley, hills on right, high and rocky, valley open and cultivated, and the track deep, owing to being ploughed in. After crossing a low col it runs over a cultivated plain, with mountains (limestone) on the right, and after rounding a hill, 4 miles from Tchiribasch, enters the plain of Enos, running, for the next 3 miles, along the base of the mountain spurs, in low swampy ground, being, though deep in places, on the whole of good surface. It then leaves the mountains, and makes straight for Enos. There are traces of a paved road in parts. Up to the entrance to Enos it is, on the whole, better than the average country track. Entering the peninsula on which Enos stands, it is very low lying, and was 1 foot 6 inches to 2 feet under water on January 17th, 1877.
				The track from Gallipoli to Enos on the whole is a good one, even in bad weather, consisting, owing to the general sandiness of the soil, of fragments of natural road, that, with a very moderate amount of unskilled labour, or more pioneering as an army advanced, might be converted into a road practicable for a rapid march of all arms, and, in dry weather, for the passage of heavy artillery.
				Track is nowhere worth destroying or blocking, except as regards bridges, as any obstruction could invariably be easily turned. The country between Kawak and Maghuris would appear best suited for small parties acquainted with the mountain paths, to harass an enemy's advance. Commanded, as the track is here, by mountains above, a small force with

Distance.			Name of Places.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				a mountain battery might do a great deal, and the existence of such would necessitate the possession of the track to Malgara, and the occupation of the mountains. The track is here, too, completely exposed to the sea, and the presence of a gunboat or two would render it impassable, and necessitate a long detour.
				From Kawak to Fakirimar the country is poor, destitute of horses, and there is paucity of transport. Grain and water are abundant, and timber for rough bridging always at hand. After Fakirimar, the country is more populous and cultivated.
				Tchelebi-keui is the most important point on the road. In wet seasons, when floods may be expected, a small force stationed here would rest its right flank on the inundations that periodically fill the ancient Gulf of Enos, and would thus obstruct the only main track leading from Enos. An enemy advancing would be forced to deploy, as, even should there be practicable tracks between this point and the sea, he could not expose his flank. A strong position, with a fairly clear front, and protected by brushwood, &c., might be selected, and a rear guard could cover a retreat towards Keschan with great ease.
				Transport throughout the country is scarce, and may be taken as about 10 or 12 arabas per village in the mountains, and 15 to 30 or 40 in the remaining villages, according to size, but there are usually more arabas than yoke of oxen or buffaloes. Stabling is scarce throughout, but grain and hay is kept in stores which might be used as stables.
				Enos in ancient days a port of great importance, is on the E. branch of the river Marizza, and stands on a low, slightly rocky peninsula, almost surrounded by marshes (for position, &c., see sketch 2 inches = 1 mile). It was still a port some 50 or 60 years ago, but at the present day only small coasting vessels of 20 to 30 tons and drawing 4 to 6 feet can ascend the river, owing to the bar at the mouth; trading vessels lying at anchor in the roads at Dragudina are loaded from these and barges. The commerce of Enos is almost completely ruined by the advent of the railway to Dede-Aghatch, as formerly the grain from Philippopolis and all the great producing districts of the interior of Rumelia, descending the river in barges here found its outlet. Now, however, it has only the export of the produce of the adjoining country on the E. of the Marizza, as far perhaps as Keschan and Malgara, and the large granaries by the river are for the most part empty and unused. The trade is in cereals, and oleaginous grain (canary seed, linseed, &c.,) (exact statistics lost owing to accident with baggage), and amounts to about 500,000 kiles (Constan-kilé) of wheat, barley, and oats. The marshes by which it is almost surrounded are dry in summer, and sesamé, &c., is grown there. The plain to the E. is cultivated and fertile. In the Salt Lakes there are three or four large fishing establishments, and a great deal of fish (mostly consumed in Turkey) is cured there. Much of the town is in ruins. It is administered by a Kaimkan. Telegraph to Constantinople *viâ* Keschan, 1 wire. Turkish and European transmission.
				Population, Christian and Mussulman, 4,500. Horses very few, camels 50, arabas 60. Houses mostly stone, upper stories wood. Large grain stores near the river, about 12. Water supply by subterranean conduit from monastery of Pantaleone very good. If cut off, supply by wells indifferent. River, 120 to 140 yards broad, stream 2 to 4 knots according to season, depth in channel 4 fathoms, caique ferry, not

TIME AND EYE SKETCH

OF ROUTE

FROM GALLIPOLI TO ENOS.

Lith^d at the Intelligence Branch, Q^r Mr Genl Department

Scale 1 mile to 1 inch

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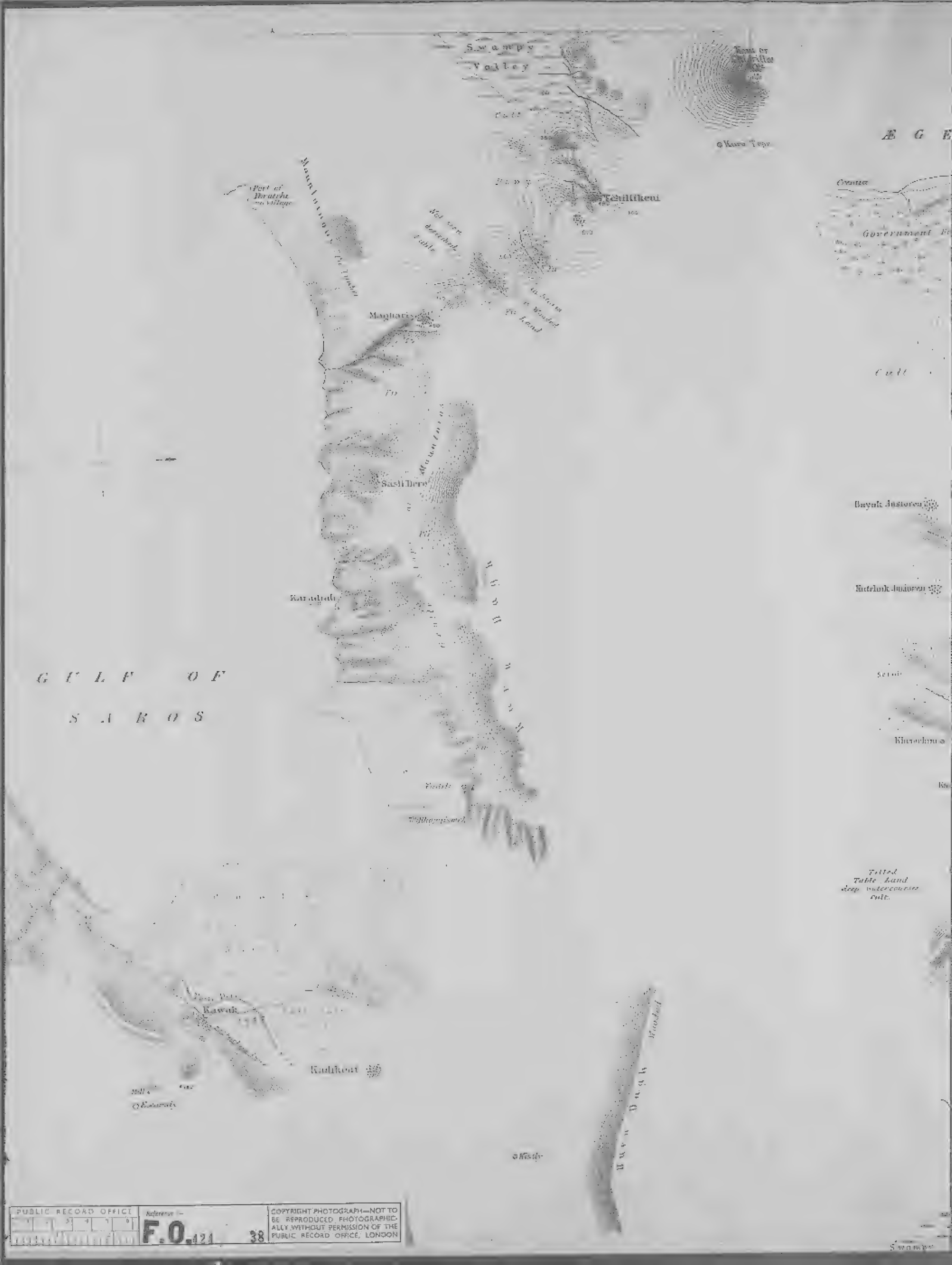

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Valley
Tchiltikeui
Sasli Deru
AEGEAN SEA
Government Forest
ENOS
Marsh
Cult Plain
Jenjakeui
Slope of Mountain
Tchatel Tepe
Buyuk Jasioren
Kutchuk Jasioren
Scrub
Alvanitis or Arnaul Keui
Khesschun
Kajkeui
Tchelebi-Seui
Gentle Slope
Inundations
Swampy

Distance.			Name of Place.	Remarks.
Inter-Mediate miles.	Total miles.	Total hours.		
				practicable for horses, no difficulty in rigging rope and making one. Barges enough to make floating bridge. 2½ miles from the town begins the Government forest of Cremà, stretching right along the coast till it joins the wooded country from near Tchelebi-keui, it contains the best timber procurable anywhere in the neighbourhood, trees being up to 3 feet 6 inches diameter, and would produce timber of short lengths likely to be of great service to a force landing here. It is rare to find a straight trunk of 18 feet. There is abundance of camping ground to the E., that near Dragutina and between it and the forest, which is down, appearing the best, there is water here in winter, and said to be some always good near Dragutina in summer, though the supply does not from its appearance seem likely to be abundant in dry weather. The whole neighbourhood, however, from the proximity of the marshes is excessively unhealthy, and fever and ague very common.

Inclosure 2 in No. 31.

No. II.—REPORT ON ENOS.

A.—As a Permanent Port.
B.—As a Landing Place.

Site examined and sketched, 2 in. = 1 mile, on January 19th. Gale and snowstorm.

Situation.

Enos, as will be seen from the sketch (2 in. to 1 mile) forwarded herewith, is bounded on three sides by marshes or salt lakes and on the fourth by mountains and the plain that slopes gently seaward from their base.

Till when a port.

Within the present century it was still a port, and vessels of considerable size ascended the river and anchored in what is at present a shallow salt lake to the west of the river.

Present condition.

At the present time Enos is no longer a port, but situated 2½ miles from the sea, on the eastern branch of the Marizza, here some 100 yards to 150 yards wide. This branch, though far narrower than the other, is much deeper, having a depth of 4 fathoms in the channel off the town. At its mouth there is a bar, over which the water in the channel varies from 5 ft. to 7 ft. Southerly winds heap up the sand and close the mouth completely, but a few hours suffice for the stream to re-open the channel. Coasting vessels of from 20 tons to 30 tons and drawing 4 ft. to 6 ft. of water ascend the river, and the commerce is carried on by means of them, and by trading vessels which anchor in the roadstead of Dragutina, and are laded by barges, caiques, and small vessels. The wider, shoaler branch of the Marizza is not navigable owing to the bar and its shoals, &c., even by small vessels (from information).

As the question of a port for so rich a country as Rumelia, outside the Dardanelles, is of great importance, this report considers first—

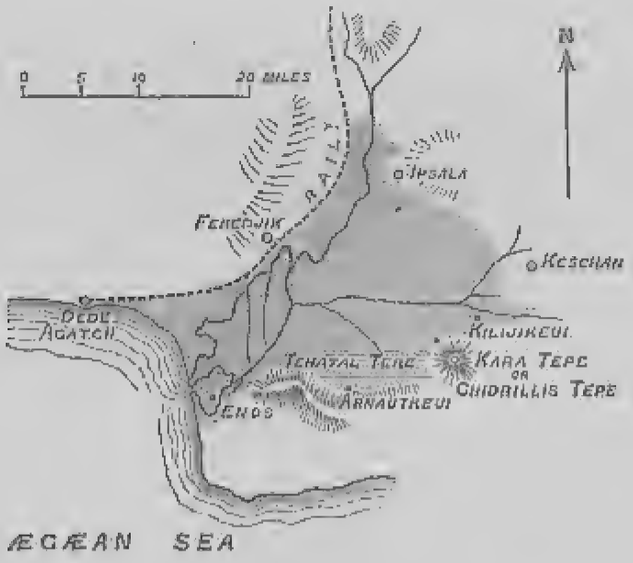
A. The question of the feasibility or advisability of the formation at Enos of a permanent port.

B. Secondly, the utility of Enos, as it at present exists, for the disembarkation of a force.

Consideration of A.

Enos, as shown by the traces of old sea wall (*vide* sketch), was once a vast and important port, and it is relevant to the question to consider how it has ceased to be so.

It is situated at the mouth of the ancient Gulf of Enos, the extent of which, as it is not shown in Kiepert's map, is approximately marked, from personal observation, by the shaded portion of the attached trace.



Enos has ceased to be a port, owing to the complete silting up of this large area by the alluvial deposit of the Marizza.

It would therefore appear that Enos is unsuitable for the formation of a port, unless the natural causes that have obliterated the ancient port have ceased to act, or are liable to control, as, otherwise, the same fate would await any modern port that should be constructed.

1. The change in the present century shows that they have not ceased to act.

2. Are they liable to control? To answer this point, it is necessary to consider what steps would appear best for the formation of a port. Two proposals might be made as to the way of executing this.

α First, to do it on a small scale by merely, if possible, rendering the river navigable for large craft.

β Secondly, by the admission of the sea into one or more of the large salt lakes.

Consideration of *α* (A). As regards the first of these two propositions, there is at present a bar with 5 feet to 7 feet of water in the channel over it, but as mentioned, southerly winds completely close this, the whole of the sands near its mouth being shifting sands. It would not, therefore, appear feasible to build walls for a channel that might be constantly scoured by the river, in fact, it is thought that no amount of dredging could keep the mouth open, so great is the movement of the sand by the sea, and that the large extent of shoal ground unfit for anchorage near it, and requiring channels to be constantly dredged, renders this proposal out of the question.

Even could the mouth be kept open, unless there were a considerable port on the river, the expense of constant dredging could not be supported, and the formation of a port actually on the Marizza has not been considered, as the river would inevitably fill it with its deposit.

Consideration *β* (A). As regards admitting the sea into one of the salt lakes, this at first sight might seem a by no means impracticable undertaking. The inhabitants are all eager to prove the feasibility of it, giving information as to the ancient port, &c.

The lake of Pondismene, separated from the sea by a narrow neck of sand, at present 85 yards across, is, they state, a deep natural basin, and the sea has but to be admitted to form a port. This basin, it is stated, is deep throughout, 2 fathoms to 4 fathoms, and has a soft muddy bottom. From wading into it, and information since received, it can be stated that it is shallow round the edges wherever examined, and will not, it is believed, be found anywhere to be beyond $1\frac{1}{2}$ fathoms deep, and generally from 4 feet to 5 feet; were a port to be constructed here the whole area would undoubtedly require dredging.

SKETCH OF ENOS

SKETCHED IN 5 HOURS JAN. 19. 1877.
GALE & SNOWFALL.

Scale 2 Inches to 1 Mile.

1 mile 2

TR

Tchoktal Tepe

Approximate Line of Shore

Almost Level

Cultivation

Boundary

Marshes

Dry in Summer and cultivated in parts

Cultivation

Vines & Fruit

ENOS

Large Salt Lake

Fishing Establishment

Government Forest

Fine Pine Timber

Marsh

Cremia

LABI

Shoal Throughout

Plain with almost imperceptible slope towards Sea

Cultivation

Tumulus (Buried)

Steep to

Approximate Line of Shore

Dragutina

Short Wall of Ancient Fort

Shoals surveyed from Hall's Tables

AGÆAN SEA

PUBLIC RECORD OFFICE

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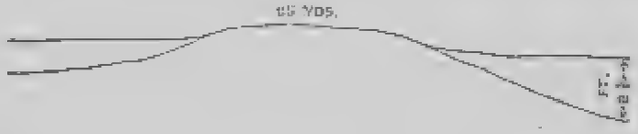
The bank seaward is fairly steep too, and 2½ fathoms soon reached; it would not, however, appear feasible to construct a port here, because the Marizza, as c

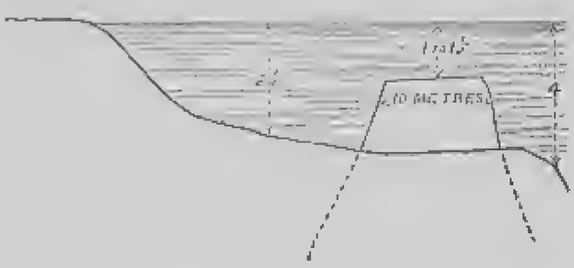


can be told from the large area of bad anchorage off its mouth, is slowly and continually pushing out to sea a submarine delta, that would, it is believed, silt up any port constructed in its immediate vicinity; that is to say, that even were its deposit-bearing waters completely excluded from a port, and were a channel to be opened, southerly winds, which pile up the sand so that the present shore is continually shifting would, in all probability, fill any port that could be constructed.

It might, indeed, appear feasible, were a great national undertaking to be made of it, to utilize the waters of the Marizza by cutting a channel across the neck of land to the south-west of the town, and using the waters of that river to scour the port.

It appears doubtful whether such a project, were there no pecuniary or other objections, would succeed, but were it judged feasible the construction of any port in the sites treated of appears to be out of the question from the following consideration.

Pondismene (*πονδιξομένη*) signifies buried (city), and according to tradition b there is here a submerged town (marble paving, &c., being at times visible). Now, in ancient days the digue, or sea wall, extended from Cremia (some distance along the coast), and at the present time this wall, built of solid masonry, and of cyclopean proportions (being some 10 metres across at the top), can be seen on calm days running generally parallel to the shore, at a varying distance of 50 metres to 100 metres, and with 1 fathom to 1½ fathoms



over it, and deeper water inside, so that with the great risk of the similar subsidence of any port to be constructed, Enos would seem, on consideration, utterly unsuitable for such an enterprise.

To the eastward of Enos there is no evident site, the water at the small port of Ibratchi being too deep to allow of its extension. Question of other sites.

Dede Aghatch, to the west, is spoken of in a separate report.

As regards the importance of Enos as a landing place for troops, &c., it would undoubtedly be of considerable importance. There is, indeed, off Dragutina and to the west good anchorage in a roadstead that, although it appears quite exposed, is sheltered by shoals; these project from near Cremia, and form a natural breakwater. As they were examined recently (it is said) by Commander Beamish, R.N., of H.M.S. "Pallas," no hearsay details as to depth, position, &c., are given. Ships can lie in this roadstead in safety when it is impracticable to do so at Dede Aghatch, and there is no instance of a shipwreck on record; in this road 17 ships were wrecked at one time in 1876 at Dede Aghatch, and the insurance policies of ships freighting to that place have been raised. Consideration of B.

The importance of Enos as a landing place would of course depend on whether a force advancing up the valley of the Marizza were in possession of the rail as a means of transport, the number of men, &c., and how long it continued to draw its supplies up the valley. As an advance would probably be along both banks, the granaries at Enos might in any case be utilized as stores, vessels lying in Dragutina roads being unloaded simultaneously with those at Dede Aghatch, the stores to be landed in launches, &c., at

Enos. As regards the selection of this as a landing place in preference to Dede Aghatch, were the rail not available, this would depend almost completely on the state of the roads from Enos, and the time of the year, although, for naval considerations, the Dragutina roadstead is undoubtedly preferable.

The Marixza, usually navigable for vessels drawing 4 feet of water, as far as Tchiftagsi, near Kalderkos, could be used for water transport, and stores transferred thence to the road or rail.

(Separate report on Marixza).

Advance from Enos.

As regards an advance from Enos, the following remarks are appended:—

1. To Gallipoli, road already described. The tracks along the coast are hard and sandy, but seem but little frequented; they could probably be utilized.
2. Towards Adrianople. The possibility of moving by the principal tracks depends on the weather and the time of the year. The whole area, covered by the ancient Gulf of Enos (marked on the trace), is usually totally impassable at intervals throughout the winter, often for months at a time, that is to say, there is no communication across the river possible within that area, owing to floods, and in by no means extraordinary seasons; no passage across the Ergine south of Usunköpru, or across the Mariza (railway excepted) south of Adrianople. The route, *via* Keselun, is then the only one practicable.

In summer and dry weather, the best route to Adrianople is to cross the river at Enos, thence across the marshes by a track reputed of hard, sandy surface, to the next ferry near Kalderkos, whence a route leads to Bidigli; here a road is met with bridges, only completed in parts, passing, *via* Solti, and Demotika, Ourli to Adrianople).

There are two main ferries, and possibly others, or only fords on this route, which might be easily followed by a force landing at Enos. The river could be bridged by the local craft of some 20 tons and large-like construction; these are admirably suited for the purpose, and are usually to be found. The wider, shoaler branch would require pontoon or trestle bridges, probably the latter. Several woods and wooded swamps, with timber of fair length and suitable size are situated between the river and the railway.

From Enos, *via* Ipsala and Usunköpru, would be another route; the part of this track liable to inundation is said to be sandy and of good surface when not flooded.

The communication from Feredjik to Ipsala is subject to similar conditions; the river is said to be crossed by rope ferry that can take horses and arabas.

Inclosure 3 in No. 31.

No. III.—REPORT ON DEDE AGHATCH, THE RAILWAY TERMINUS ON THE ÆGEAN SEA.

A.—As regards its Existing Condition;
B.—As regards its Value as a Site for a Port.

This Report may be considered supplementary to that on Enos. Site visited on February 5th.

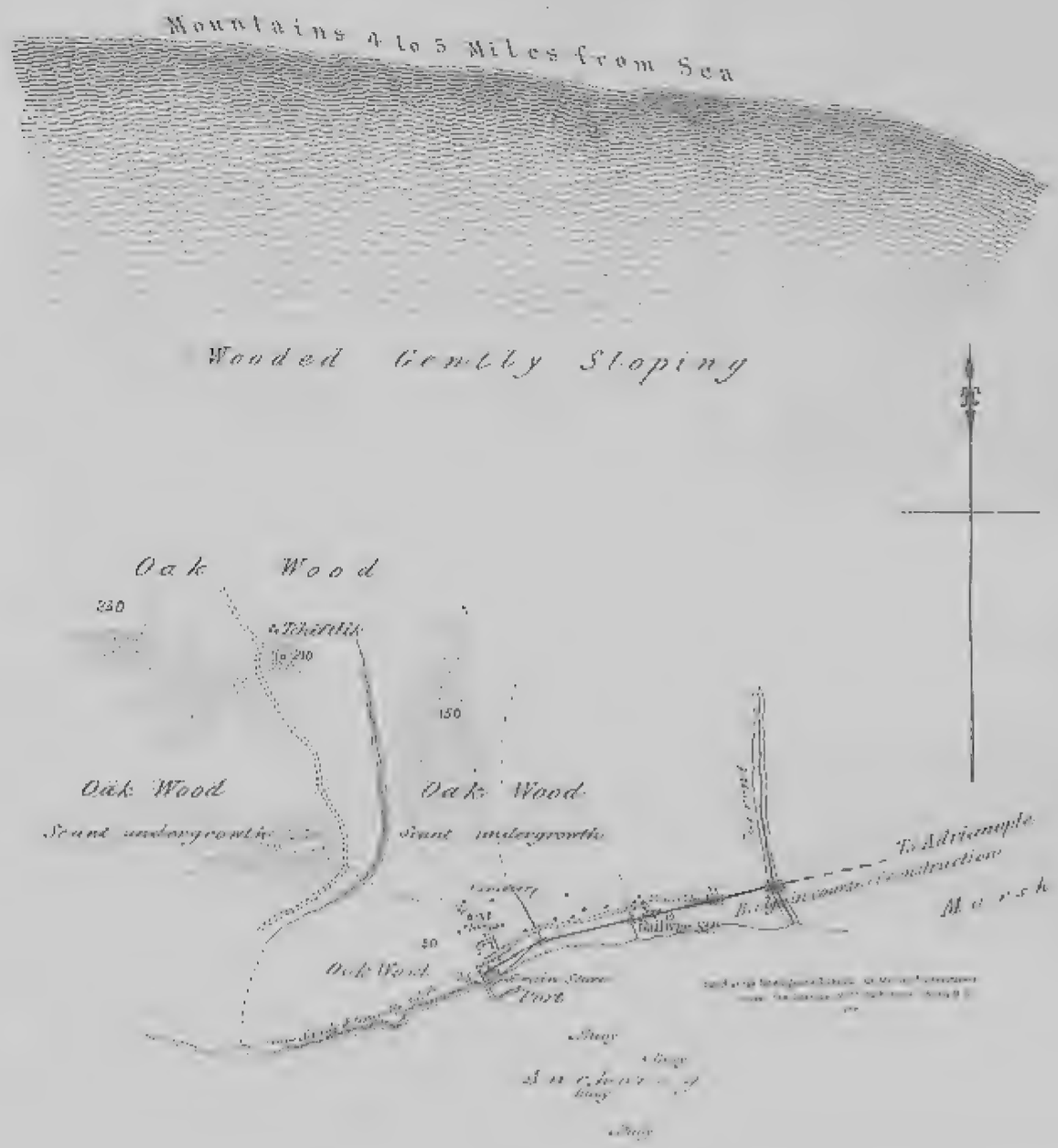
Introductory.

Dédé Agatch, the terminus on the Ægean Sea of the Constantinople—Adrianople Railway, has no pretensions in its present condition to be called a port, being merely an exposed roadstead. As being the outlet, however, of the vast grain-producing districts near Philippopolis, and of the fertile province of Rumelia generally, its commerce is considerable and continually increasing.

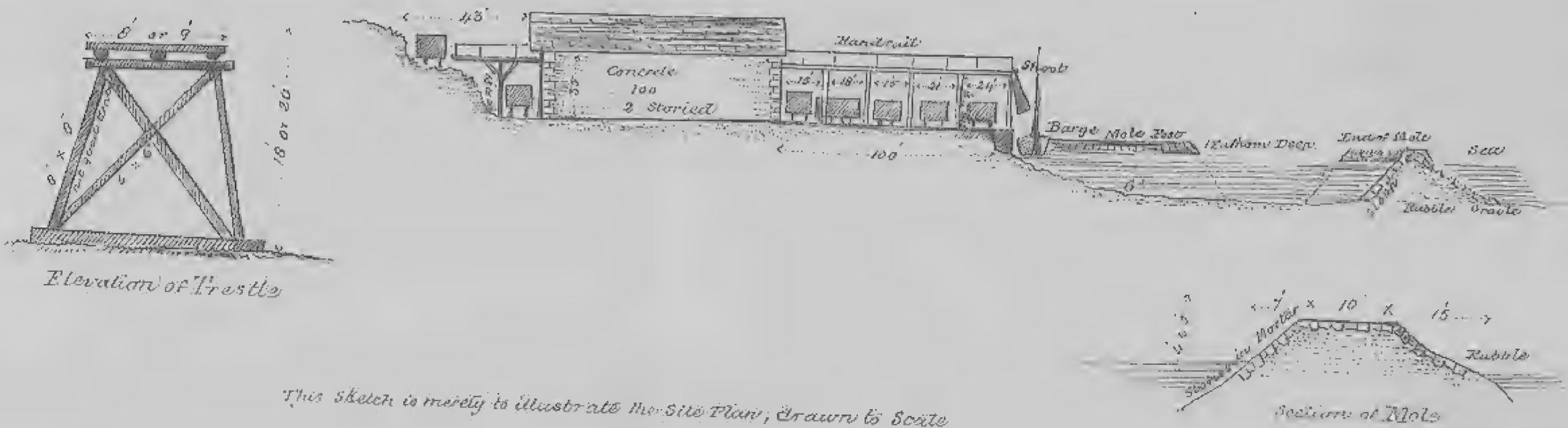
In 1876 (exact statistics as to different kinds of grain, &c., lost, owing to accident to baggage), it amounted in cereals alone to about 1,000,000*l*. Turkish, and it has besides a considerable trade in the oak produce of Valonia, oleaginous grain, &c. There are three trains weekly each way, and more, if required.

ROUGH SKETCH
(BY TIME, EYE, ANEROID, & ONE OR TWO COMPASS BEARINGS)
OF
RAILWAY TERMINUS, SMALL PORT &c. AT DEDE AGHATCH

Scale 2 Inch Mile

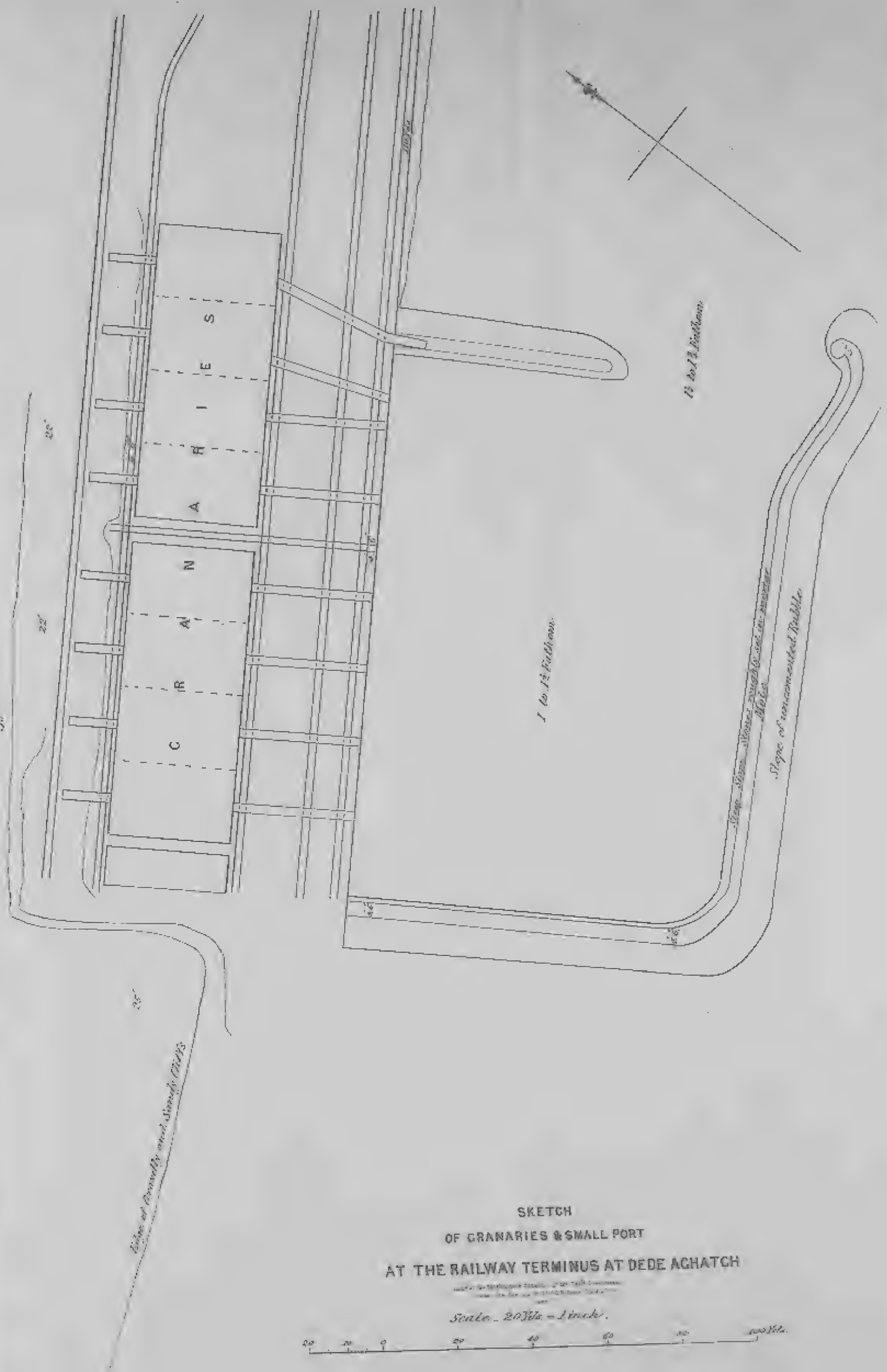


ROUGH SKETCH SHOWING ELEVATION OF GRANARIES AT DEDE AGHATCH.



This Sketch is merely to illustrate the Site Plan; Drawn to Scale

Lith^d at the Intelligence Branch, Q^r Mr Genl Department,
under the direction of Lt Col. R. Home C.B. A.Q.M.G.
1877



SKETCH

OF GRANARIES & SMALL PORT

AT THE RAILWAY TERMINUS AT DEDE AGHATCH

Scale - 20 Yds = 1 inch.

0 20 40 60 80 100 Yds.

Site.

Dedé Aghatch is situated in low alluvial land, forming the end of a gentle slope from wooded mountains, distant to the west here some 6 miles from the coast, but meeting it further on. Towards Enos is an immense extent of marsh. As from its commerce it might be imagined that the site presented natural advantages for the construction of a port; it may be mentioned, that the contract between the Hirsch, or contracting company of the Ottoman railways and the government, is said to oblige the latter to construct a port wherever the rail should strike the sea coast, and Dedé Agatch appears to be the first point where such an undertaking is practicable, and the easiest of access, whereas the prolongation of the line to the west where, from the map there appear to be preferable sites, would be an undertaking of little remuneration to the company.

Railway station.

The railway station is three-quarters of a mile distant from the small port, and has a considerable amount of siding accommodation, water-tank, turntable, &c. The railway runs down to the port and has there 6 lines, as shown in the sketches, one being on the level of the upper floor of the granaries.

Description of small basin or port.

The port consists (see sketch) of a small mole or breakwater, enclosing a shallow basin, that gives shelter to the numerous barges and small coasting vessels that are employed in the trade here. The depth of this port is about 6 feet throughout, but alongside the quay it is only some 3 to 4 feet. The mole is of section as shown. The quay constructed of good-looking limestone, brought from Maronia by barges; and the mole in rougher limestone, and much of the rubble in the sandstone found in the neighbourhood. The construction of a port here would, it is believed, cost not less than 600,000*l.* or 700,000*l.* sterling, probably more. It is, as said, the first point at which the construction of a port is feasible, because it may be considered clear of the bad anchorage and foundations caused by the shifting sands of the mouths of the Marizza, and beyond the danger of being silted up by the action of that river. The Government do not appear likely to take any steps at present for the construction of a port. The entrance to such port would always be difficult and dangerous in southerly winds, as it would have to be near the shore, where there is not much water.

Roadstead.

The roadstead at present is excessively open and exposed, and so unsafe in southerly gales (17 ships wrecked at one time in 1876), that the price of the policies of insurance for ships trading here has been raised. The island of Samothrace is too far distant to act as an efficient breakwater, and its coast being ill-lighted, it is only a danger. The commerce is at present carried on by vessels anchoring in the roads some 500 yards to 1 mile or 1½ miles from the small port. They are then laden by barges and small craft which load alongside the quays. Along the quay extend two large buildings, each forming 4 large 2-storied granaries, 100 feet by 60 feet by 35 feet (to pitch of roof). There are to each of these two raised wooden stagings at the level of the upper storey, one communicating with the high level lines of rails in rear of the granaries, the other with the quay, grain being poured down a shoot into the holds of barges. The buildings are solidly built in concrete and limestone.

Description of granaries.

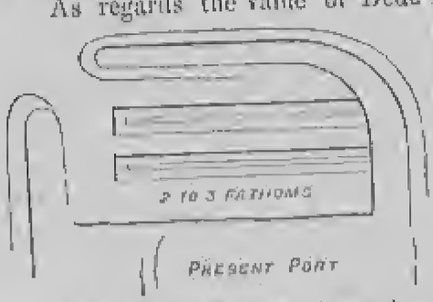
Village.

The village of Dedé Aghatch consists of about 80 houses, and numerous hovels. Inhabitants 1,200, 500 of whom are Armenians. All grain is shipped by porters, and any unshipping of imports by similar means; there are no cranes of any description. The houses are new and mostly well-built, and only erected a few months; the place is rapidly increasing in size. The village is surrounded by an oak wood, with but little undergrowth, extending to the mountains.

Absence of cranes.

Value as permanent port.

As regards the value of Dede Aghatch as a permanent port, it may be said that it is only of value as on the railway, that, owing to such natural disadvantages, its exposed position and the shoal water in shore, any port to be constructed would be very costly and require to be extended seaward, some such undertaking as filling-in the present port and building quays sheltered by a breakwater beyond being necessarily a costly operation.



Value as a landing place.

As a landing place, its value would mainly depend on the possession of the rail, the only communication from the place as either railroad or road, the numerous bridges rendering it capable of being so broken up, as in case of such devastation, to suggest an advance on the other bank *viâ* Enos as preferable. In possession of a road,

a force and stores might be landed here, the vessels taking refuge at Dragutina in case of severe weather. The granaries, their stages, &c. would be of great use, and launches could enter the port. There are no facilities for landing stores of the nature of heavy artillery, &c., and these would have to be provided. Timber of fair scantling (oak) is easily procurable, and a certain amount of imported timber of indifferent quality is at hand.

Timber.

Capability of resisting hostile landing.

The site is not adapted for a successful resistance to a hostile landing, as there are no eminences of importance commanding the port within artillery range.

Of the three eminences shown in the eye-sketch only the two western command the port, and are hidden by the trees and the village from the other, and boats near the shore would not be visible from these, being traversed by low cliffs, trees, &c.; all three are much exposed to fire of vessels in the roads.

Unhealthiness.

Water is good, and the supply said to be plentiful. Timber is abundant, and the wood quite open enough for camping. The place, like all the low ground in the valley of the Marizza, is excessively unhealthy, fever almost universal (a plantation of eucalyptus globosus has failed, trees all dead). It is possible to pass hence along the sea shore to Enos, the mouths of the Marizza having, of course, to be crossed. The passage is, in parts, along a narrow neck of sand.

Inclosure 4 in No. 31.

No. IV.—REPORT ON TRACK FROM ENOS TO ADRIANOPLE *via* IPSALA AND USUNKÖPRU.

Route traversed and examined on January 31st, February 1st, 2nd, and 3rd. January 31st, fine, thermometer 26° Fah.; drifts, 30 ft. deep; streams frozen, detour of 8 miles necessary. February 1st, strong wind, light snow; February 2nd, strong wind, very heavy snowstorms at intervals, Marizza Valley impassable; February 3rd, snow and sleet, gale.

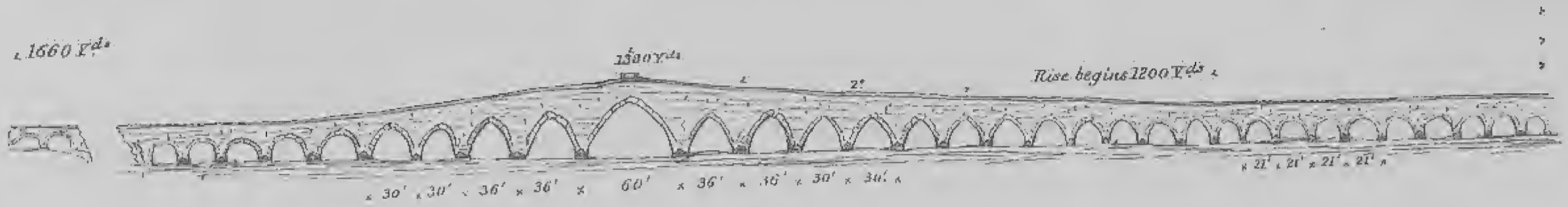
Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				Enos to Adrianople viâ Ipsala and Usunköpru.
			Enos ..	Across low ground, liable to floods, 20 ft. stream, 2 ft. deep, swift.
2	..	..	.. ..	River Marizza close to track on the left, and 100 feet below.
1	..	..	.. ..	Track so far over cultivation, of good surface, but liable to floods for 2 miles, and then of rather poor surface owing to ploughing; in gradients easy. Track now winds along base of mountains, which it leaves (it is said) about 10 miles from Enos, it now strikes straight across the marshes for Ipsala, which is visible; it is described as of good surface in dry weather. Streams fordable, the river from Keschan, being passed by a wooden bridge, and a small village, Gechebli, lying some 4 miles to the left, the only village near the route, although several tchiftliks inhabited in summer, are passed.
10	..	2¼	.. ..	
		4½	.. ..	
		8	.. ..	3½ miles from Ipsala it meets a low projecting spur, and passes through the village of Akhir-keui, and runs thence over low ground to Ipsala. The track from Feredjik, crossing the Marizza by raft and rope ferry, meets it at Akhir-keui. The marshes throughout are cultivated in summer, more or less, for sesame, &c., and in parts for Indian corn.
	30 about	9	.. ..	Ipsala, 200 feet. Hills above 350 feet. Once a town, now merely large Turkish and Circassian village. Streets mostly unpaved, houses nearly all one-storied and scattered about. It is situated on

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
		Time from information.		the west slope of hills, and its centre is about 120 feet above the low plain of the river. Enos visible with glasses. 500 houses. Mussulman population, administered by a Binbashi. Much of the place, including four mosques, in ruins. Oxen, sheep, &c., abundant, country rich and cultivated, two-wire telegraph, only Turkish transmission. Water abundant, numerous fountains and horse troughs. Houses squalid. Stable for 40 horses at Khan; stabling presumably abundant.
1¼	31¼	..	.. ..	Enter marsh. Hills to right trend, E. Long valley to left.
1½	..	..	.. ..	Small bridge in stone causeway, fair order.
2½	..	..	.. ..	Stone causeway still, two-arch bridge, fair order.
				This stone causeway is in very bad repair, and the roadway in places only 5 feet wide, impassable for any but araba wheel traffic; doubtless in dry weather other tracks lead across the marsh, fording the streams. In floods it is the only one available, and itself often covered.
2½	..	..	.. ..	Leave marsh, reach gently sloping down.
4	..	..	.. ..	Over open down, sparse thorn scrub; four and one-wire telegraph (Saloniki) cross, two-wire telegraph (from Ipsala), 1 mile to right.
				Still ascending on down (400 ft.)
5½	..	..	.. ..	(410 feet) commence gradual descent; cultivation
7	..	..	.. ..	begins.
8½	..	..	.. ..	(360 feet), track bad and heavy owing to ploughing in.
9½	..	..	.. ..	Brook—steep approach (6°); track very bad; steep banks.
2½	33½	..	Sultan-keui	Armut village of about 100 houses, on cultivated ground on north side of brook, trees, &c. Small Turkish village, Kharalaji, in neighbourhood. Track leaving Ipsala is excellent till it reaches the marsh. Here a causeway, not practicable for the passage of a force without considerable repair, crosses it. In floods it would be the only passage, and would form a defile very difficult to pass in face of a very small force with one or two guns on the gently rising ground in front. A detour nearly as far as Kurnadji-keui would be necessary to turn it (15 miles). At 2½ miles track leaves marsh, and is excellent over sandy soil, with gentle rise to 7½ miles, here cultivation begins, track ploughed up, and bad as far as Sultan-keui, bad gradient for some 200 yards approaching brook (6°) at that place.
				Track to right. At Sultan-keui tract to Yörik Tepe branches.
¼	..	..	.. ..	Enter valley.
1½	..	..	.. ..	Track to right (best to Balaban-keui, Yüno, &c., when other is flooded).
3	..	..	.. ..	Track turns to right, and leaves valley, enter marsh across 20 to 25 feet stream, at times not fordable, but to be forded above by considerable detour.
7	..	..	.. ..	Across marsh to low spur.
8	..	..	.. ..	Re-enter marsh at mill. Balaban-keui Güno in front. River, swift stream, 6 feet deep, 50 to 60 feet across, stone bridge, with considerable camber, centre arch 20 feet, smaller ones 10 feet, in bad repair, easily repairable.

10	49½	..	Balaban-keui	Across marsh to Balaban-keui, Turkish village, edge of marsh at south extremity of gently sloping land (120 feet); 50 houses; 60 oxen; stabling 40 to 50 horses; good water; average yield, 3,000 kiles wheat, 1,000 barley, besides Indian corn, and a great deal of hay, stacked in the open.

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				Half hour to left (to the west) at no great distance from the Ergine, is Tatar-keui, 60 houses (Turkish).
				Half hour right, under the hills, Kharula, 20 houses (Turkish)
				One hour E.N.E., Yone, 60 houses (neither Turk nor Greek, probably Schav).
				Track leaving Sultan-keui with a bad gradient of 4°, enters valley, and following it for 3 miles, is of excellent sandy surface; if marsh is impassable, a branch track at 1½ miles should be taken, or the route *viâ* Yörik Tepe selected. At three miles track enters marsh, ford at times impassable, if so detour (as shown in road-sketch) must be made, and the river forded above, and the marsh avoided. Crossing the marsh that extends to the left to the Ergine, the junction of that river and the Marizza being about west by south of Sultan-keui, the track is not apparently of good surface, as though across sandy soil; there is much cultivation. To the right the marsh is bounded by high scrub covered hills, and Yörik Tepe is visible up the valley to the right, on a high hill.
				At 7 miles the track, after fording one (or more) streams, strikes a spur, and winding round its base, where it is of heavy surface at 8 miles crosses a river by a bridge, being joined by the track that skirts the marsh.
				From here to Ruhban-keui it is across cultivated marsh, with pools and reeds to the left, it is passable except in high floods, but bad at such time, and forming a défile more difficult of passage than that at Ipsala. A considerable detour along the base of high scrub-covered hills is necessary, and the stream hard to pass above.
1½	..	..	..	Cultivation soon ends and gives way to down and sparse scrub. Brook, no banks.
2	..	..	..	Rill, no banks. Thorn scrub.
3	..	..	..	Gradual rise to here.
3½	..	..	..	Shallow valley.
3½	..	..	..	(300 feet); track bad.
4½	..	..	..	Turkish village (200 feet); 70 houses; fountain;
5	54½	..	Kürtbeli ..	water supply good always. Track very deep in Ruhban-keui passes, thence with easy gradients, over a very open down country; view, however, not extensive. Before Kürtbeli there is a patch of cultivation, and the track, hitherto of good surface, except in the dips, is bad. Entering the village bad gradients, track, as all unmetalled tracks are, very bad in village.
				Rill, no banks.
1½	56	..	.. ..	Shallow valley.
2	..	..	.. ..	Tcherkess tchiftlik (1,500 feet) right, on cultivated
3½	..	..	.. ..	land.
				Yeni-keui (Greek); 60 houses; 3 miles to right,
4	..	..	.. ..	on low hills above river.
				Leave downs to cross valley; enter marsh;
5½	..	..	.. ..	wooden bridge of round timbers 14 feet span; 8 feet roadway, requires strengthening.
				Small stone slab bridge, 6 to 8 feet roadway, only 3 feet wide, over
6½	..	..	.. ..	stream, with steep banks.
				Stream not over 30 feet, fordable.
6	..	..	.. ..	Rivulet.
6½	..	..	.. ..	Saraly (Turkish village); 20 houses (150 feet);
7½	..	..	.. ..	plenty of hay; water good; fountain; rivulet through village.
				(180 feet) Csmkiöru bridge visible.
8	..	..	.. ..	Marshy valley, with stream, crossed by stone
9	..	..	.. ..	causeway, 300 yards fair order, river here visible, about 1 mile to left.
				Valley, brook 10 ft. to 14 ft. Slab-stone bridge,
10	..	..	.. ..	12 ft. wide, 10 ft. roadway, in good order.

BRIDGE OVER RIVER ERGINE AT USUNKOPRU



This Stone bridge commences immediately on leaving town of Usunkopru, and at 870 yds. a branch of river passes through 4 Bays. Stream 30 yds wide, 5 to 6 deep; up to this point it is merely in ordinary times a viaduct across the marshes. At 1085 yds. commences a stream and occupying with its width 8 bays, 6 feet deep. At 1200 yds the gradual rise begins, at 1320 the main Stream begins. 90' wide running swiftly as it is just below a weir and 10 to 12 deep. The weir is just above the bridge and there are 2 mills, built on piles one above one below. The bridge is in excellent repair, and very solidly constructed, the Starlings are of [illegible] and the stones cramped together with iron, the roadway is 26 wide, the parapet 2. 6 high, the height above the marsh 12 to 15, the rise of the arches about 10, and distance from centre to centre abutment 21. The arches are round, and there are said to be 166 of them; the bridge is 1660 yards long, the bearing of its axis 145 (true).

The paving of the roadway is well laid and in excellent order. In floods it is said that there is water through the whole bridge, the rise of floods being from 6 to 8 above the ordinary marsh level.

Lith^d at the Intelligence Branch, Q^r Mr Genl Department under the direction of Lt Col. E. Home C.B. A.Q.M.G.
1877

P.O. 424
38 PUBLIC RECORD OFFICE, LONDON

Distance: Intermediate miles.	Distance: Total miles	Distance: Total hours.	Name of Place.	Remarks.
10½	..	..	.. ..	Grove, fair timber; track by edge of river.
11½	66	..	Usunköpru	Big bridge, 150 ft., with a steep gradient from Kürtbeli. Track rises on to rolling down land, of easy contour as before, and sloping W. to river. It is of easy gradient and fair surface to Saraily, but where it crosses the marsh, 5 to 6 miles out, it is liable to be very bad in heavy weather, and one bridge is impassable for wheel traffic. Cultivation only in patches as far as Saraily, where the track is very deep in the village, and bad as to gradient and surface on entering and leaving. After Saraily the cultivation is continuous and the track poor; near Usunköpru it is on the edge of the marsh heavy in wet weather, and liable to be impassable. Levels good.
				Usunköpru (big bridge) is a large town of 4,500 inhabitants, on the River Ergine. The population is Greek, Turk, and Bulgarian, with a few gipsies. It is situated on the western slope of hills above the Ergine, is well built, and with wider streets than usual. Houses stone, upper storey wood, and wooden. It is 3 miles from a station on the Adrianople—Constantinople Railway. The country around is very bare and open and all under cultivation; the commerce completely in grain, chiefly cereals, is considerable, as the number of dependent villages is 68. Three-fourths of export, at least, leaves by rail, the remaining fourth by river (rafts or caiques) and by land transport. It is administered by a Kaimakan. A one-wire telegraph from Keschan connects it with Adrianople (Turkish transmission only).
				Tracks lead hence to Rodosto. Stream, on leaving town, crossed by two-arch stone bridge, in good order, some 20 yards across.
				Malgara, 8 to 9 hours; Keschan, 8 to 9 hours; Ipsala, 8 hours; Demotika, 8 hours, only practicable when the rivers are not flooded, the Ergine being passed by the bridge and the Maritza by caique ferry, and to Adrianople, passing over the Ergine bridge. A road leads across the bridge to the station, distant 2¾ miles. It is macadamized, but falling into disrepair through neglect.
				There are several fountains, and the water-supply independent of the river is good. Town reported fairly healthy. Stabling at Khan for 60 or 70 horses; probably for 300 or 400 in town.
				Usunköpru would be capable of defence against a force advancing from Enos, Keschan, &c., the plateau immediately above it to the east of the town being occupied as a *tête du pont*. The strength of the position (*see* road sketch) on the west side of the river is evident, and its occupation would render necessary the passage of the Ergine below. It is very strong, even supposing both rivers easily fordable; and in time of floods, if occupied by a small force and a few guns, would, it is thought, be impregnable, except by detour to north.
				There is abundance of open ground around Usunköpru suitable for camping; it is mostly, however, cultivated.
				A wonderful bridge or viaduct here crosses the marshes. It is 1,660 yards long, and has 166 arches, it is said. At 800 yards from the town first branch of stream, 5 ft. to 6 ft. deep (January) and 40 yards wide, runs through four arches; at 1,085 another branch, 6 ft. deep, through eight arches; at 1,320 yards, main stream with channel 30 ft. wide between stone walls when not overflowed. The bridge is completely overlooked by the hills immediately beyond it on the Adrianople side, which commands the other bank. It would scarcely be worth while to destroy any but the parts over the two biggest streams, as

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				any other gaps would merely require to be filled in, ample waterway being left. In dry seasons the river could be easily bridged at the weir, and probably forded below; and the mere destruction of the bridge would not do much to retard the advance of any force.
				Bridge commences on leaving town.
1	..	..	.. ..	Bridge ends. Road to station turns to right along river, also telegraph. Uphill, traces of paved road, track bad and deep, gradient steep; scrub. Heavy wagons would do best to make detour by railway station.
2	..	..	.. ..	
3	..	..	.. ..	Descending valley, railway station 1,500 yards right.
3¼	..	..	.. ..	Cross railway. Wooden bridge on railway; 20 feet span, stone abutments, open roadway.
				Track, small stream, wooden bridge.
4	..	..	.. ..	Rivulet, railway. 6-foot wooden bridge, railway trending away to left.
5¼	..	..	.. ..	Brook, insignificant.
6	..	..	.. ..	30 feet to 40 feet stream, 3 feet or 4 feet deep, steep banks.
7	..	..	.. ..	On ridge (400 feet), low scrub. Commence descent to Tchaknak.
8¾	74¾	..	.. ..	Deep brooks, banks 12 feet to 14 feet. Rough wooden bridge, only available for mules.
			Tchaknak	Turkish village (200 feet), 2 or 3 tchiftliks, and a few houses besides. Well off for oxen, buffaloes, sheep and farm produce, stabling, &c. Fountain, water supply reputed good. Situated in a hollow. Cultivated valley.
				From Usunkopru a paved road leads across the bridge, and, at 1 mile, a macadamized road branches to the right along the river. The road to Adrianople is paved where it ascends the hill, with a gradient of 4° to 5°, and, at 1½ miles, becomes a track descending the hill to where it crosses the railway at 3 miles. It is, so far, heavy, deep, and bad, as to gradient and surface. After crossing the railway, it runs over hills of gentle contour, mostly cultivated, part in grass. Over these it must be very heavy in bad weather. Another track follows the railway in the valley, turning along the base of the hills, when the latter crosses the river. When not flooded, it would be preferable, as avoiding hills, and is probably shorter. Into Tchaknak the gradient is bad (about 7°), 300 feet. The station of Kuleli Burgas is visible beyond the river nearly 3 miles to left. This is about 1 mile beyond the railway bridge over the Mariza, which consists of three bridges connected by embankments; the centre one iron lattice girder 100 metres long, the other two, wooden, 100 metres each. Excellent stone quarries at Kuleli Burgas, the junction of the Adrianople—Constantinople, and Adrianople—Dede Aghatch lines.
¼	75¼	..	.. ..	
¼	..	..	.. ..	Rivulet. Down, sparse thorn scrub. Watercourse, banks very steep, impassable for wheel traffic, which should take to the left down this watercourse, and strike a marshy plain, meeting there the main track before mentioned.
1½	..	..	.. ..	
3	..	..	.. ..	Cross stream, 20 feet to 25 feet, shallow, at Serjelu, Turkish village of 25 houses.
3½	..	..	.. ..	Hill top, cultivated and bare.
4	..	..	.. ..	Down, cross valley.
5	..	..	.. ..	Along ridge (480 feet), a shallow valley parallel to track to left, and a valley, scrub and thicket, &c., oblique to track to right. Plain, 1 mile to right.
8	..	..	.. ..	Down, covered with dense oak scrub, intersected by ravine-like watercourses.
9½	..	..	.. ..	On ridge, clear of scrub (580 feet), shallow valley to left still.

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
11	..	..	.. ..	On watershed, sandy, loamy, very steep scarped hills above plain. Track descends to plain by zigzags, is bad and deep, gradients impracticable for heavy traffic.
12½	87¼	..	.. ..	Karakasim (250 feet), Greek village, situated on affluent of Marizza, which divides the two halves of the village by about half a mile. 60 houses. Houses of alluvial mud cut into bricks, and thatched. Water supply always good. 3,000 kiles Indian corn, 3000 kiles wheat, 2,000 kiles barley. Stabling for 20 horses. Houses wretched hovels.
				After Tchaknak, the best track in dry weather is all along the bases of the hills, and near the Marizza. A branch from this leads to Karakasim, the main track passing the Soltejmen Dere by a ford, and running straight on. When the ford is not passable, the route is *viâ* Karakasim, where there is a causeway; detour slight. The high level track from Tchaknak leaves with a bad gradient, and is of bad surface, over cultivated land, to Serjelu, the steep banks of some watercourses rendering it impassable for wheel traffic.
				Steep hill from Serjelu, track of bad surface, over cultivated land, from Serjelu on to downs, where it meets track from some village to N.E. It then runs up to 11 m. along a watershed ridge, and is excellent, but descends with a very bad gradient (7° and over) to a cultivated plain, where it meets the low level track. Plain sandy soil, but low lying.
1	88¼	..	.. ..	Track crossing marsh and streams by causeway in fair order, repaired in places with fascines along
2¼	..	..	.. ..	reverse slope of low ridge between Marizza and Soltejmen, cultivation to left, stream to right, and marsh, branch track to right to Adrianople, joining, it is believed the Adrianople—Stamboul road, 5 or 6 miles from the former city, left hand track shortest.
2¾	..	..	.. ..	Ridge (350 feet).
4	..	..	.. ..	Adrianople visible. Village, Tatarkeni, 2 miles to left, among trees, on Marizza.
6	..	..	.. ..	Leave ridge, Marizza 1½ to 2 miles to left, in low cultivated plain, groves at intervals of fair looking timber on its banks.
6½	..	..	.. ..	Ridge, hitherto on right, trends away meeting the low cultivated hills that command the Stamboul road, latter also in the plain.
7	..	..	.. ..	In cultivated plain, fruit trees, &c., 20-ft. stream, a few inches deep, sandy, low banks.
8¼	..	..	.. ..	Marshy. Stream 15 feet wide, 6 inches deep, sandy, no banks. Grove 800 yards right, indifferent timber, fruit trees, &c., track sandy and hard, trees on left, close to track, poplars, willows, &c.
9½	..	..	.. ..	Tchiftlike.
10	..	..	.. ..	Close to bank of Mariza, centre Adrianople.
11	..	..	.. ..	
12½	99¾	..	Adrianople. .	From Karakasim the track lies for the first mile across a marsh, traversed by a stone causeway, thence it gradually ascends a low ridge, which it leaves 5 miles out. Up to 2½ miles it is nearly level, sandy, and of excellent surface. From this point to Adrianople it is very bad, and for two miles from that city is bounded by banks, a very slight rise of the river covering it with water. When such is the case, the right hand track should be taken 2¼ miles from Karakasim, or one of the numerous branch tracks in the cultivated plain, 5 to 6 miles beyond that. The country is all perfectly open, is under cultivation, and about Adrianople appears exceptionally rich with abundance of fruit trees.
				Résumé
				The best tracks from Enos in dry weather have been already mentioned. In any, but exceptional

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				floods, that *via* Keschan and Usunköpru is passable. The tracks, mostly of good surface, but low-lying, are suitable when not flooded, for the advance of all arms, and in winter transport by arabas (usual loads minimum 8 cwt., maximum 19½ cwt.), would be practicable when heavy wagons could barely pass, and would ruin the tracks. This route is generally speaking, along the Marizza and Ergino valleys, and after Tchelebi-keui (on Keschan route) the country is throughout open with but little timber, and few hills of any but gentle contour. Much of it is in grass, and it is capable of far more cultivation. Supplies of grain and forage could be requisitioned and collected at Usunköpru, Keschan, and Ipsala, the natural centres. Cattle are plentiful after the mountain country, and in winter nomad herds of sheep numerous, mostly pastured in scrub. Horses are more plentiful than on the Gallipoli—Enos route. Water supply, as far as can be judged from winter reconnaissance, good.

Inclosure 5 in No. 31.

No. V.—REPORT ON TRACKS FROM ENOS *via* KESCHAN TO ADRIANOPLE.

Route traversed and examined on January 20th, 21st, 22nd, 23rd, 24th, 25th, 26th and 27th (snowed up each day), 28th and 29th, as far as Keschan. January 20th, gale, snow; 21st, 22nd, 23rd, violent tempest, incessant blinding snow; 24th, break for a short time; 24th, 25th, 26th and 27th, tempest as before; 28th and 29th, snow, less wind, drifts over 20 feet deep, all streams to be cut, snow lighter.

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				Enos to Adrianople via Keschan.
16	16	..	Enos .. Tchelebikeui	Enos described in Route . The track up to this point is identical with that from Gallipoli to Enos.
¾	..	..	.. ..	Track branches from Saludja; track to left. Down gently sloping, cultivated valley.
1	17	..	.. ..	Stream crosses track obliquely, right to left, sandy low banks, stones, depth 1½ ft., width 15 ft. to 20 ft.; stream with steep 10 ft. banks, parallel to track to left.
1¼	..	..	.. ..	Enter defile; hills on left gentle, scrub-covered, intersected by watercourses with high steep banks; hills to right also low scrub, not very dense; poor timber on both sides (telegraph poles with difficulty procured from it).
2	..	..	.. ..	Uninhabited cottage. Telegraph, 1 wire, close. Stream to left. Gorge some 200 yards across at base of hills, track easy to destroy, but defile easily turned by Saludja track.
2½	..	..	.. ..	Defile ends. Enter plain, very gentle slope, mostly

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TIME AND EYE SKETCH

ENOS TO ADRIANOPLE.

VIA

IPSALA AND USUNKÖPRU.

Scale 2 miles=1 inch

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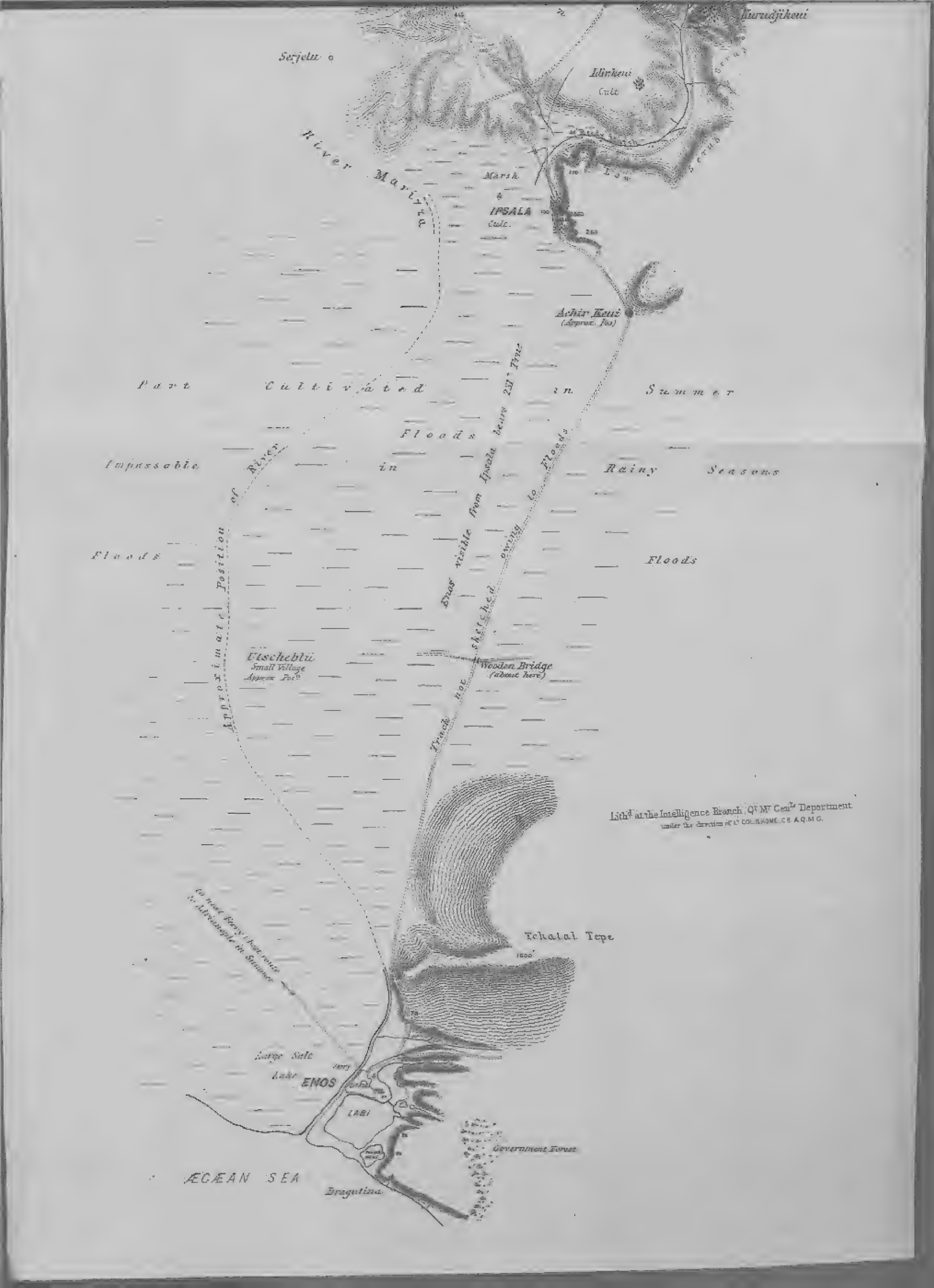

Lith^d at the Intelligence Branch, Q^r Mr Genl Department
under the direction of L^t COL. R. HOME, C.B. A.Q.M.G.

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				cultivated, sparse timber, oak, willow, &c., pollard and bad.
3½	..	..	.. ..	Stream right to left, 30 ft. to 40 ft. across steep banks; 2 ft. to 3 ft. deep, more in floods, and barely fordable at such times; timber at hand; ford above on Salndja track.
4½	..	..	.. ..	Gradient, 3° to 4° approaching stream, 20 ft. across, deep in floods, always fordable. Inundations 1 mile to left.
5	21	..	Parawr or Paraour	A straggling Greek village, much in ruins, 30 houses. Average yield, 1,000 kiles wheat, 500 kiles barley, pigs and sheep, 20 oxen. Water always good (height 70 ft.) Hill above, 100 feet. 1 hour to left Turkish village of Akhuja, six houses and three tchiftliks, much farm produce, water supply bad in summer; ½ to ¾ hour right Salndja.
				Track from Tchelebi-keui bad, and deep leaving village, and heavy down the cultivated valley, branching to left from Salndja track, passes through defile, with telegraph alongside on the right bank of a swift 30 to 40-ft. stream with high banks, 12 ft. in places, gradients good as far as the plain at 2½ miles; here it lies over heavy swampy ground, bad gradients at watercourses, country perfectly open to Paraour, track crossing the extremities of spurs of Kara-Tepe.
½	..	..	.. ..	Brook, steepish banks, cut away at track.
1	..	..	.. ..	Brook.
2½	..	..	.. ..	Brook.
3½	..	..	.. ..	Stream (under 20 feet). Flat deep grass country, stunted timber.
4	..	..	.. ..	Brook.
4½	..	..	.. ..	Stream under 20 feet, marsh and inundations 1 mile to left.
4¾	..	..	.. ..	Rivulet.
5	26	..	Kyskapan or Schabbana	Rivulet.
				Mountain stream, steepish banks, liable to floods (apparently deep, frozen).
				Track skirts village of Kyskapan, 100 yards to right on slope of spur of Pirigos Tepe, 30 houses, Track as before over undulating country, crossing three small streams and numerous brooks, beds deep cut into alluvial soil, willows, &c., on banks.
				Mountain of Kara Tepe 2 or 3 miles on the right, low inundated country to left; track described as fair even in heavy weather, probably this is owing to sandiness of soil.
3	..	..	.. ..	Hadji Costadji tchiftlik, a farm in an open gently sloping country, 2,200 yards to left, and half an hour beyond Yabaldak, a Greek village, 40 houses, reputed very poor.
1½	..	..	.. ..	Second mountain, watercourse on spurs of Pirigos
2¼	..	..	.. ..	Tepe, low scrub. Telegraph hitherto following the general direction of the road; here strikes straight for for Keschan, and the direct track also branches to the left. When the river some 2 miles on is not fordable, or the plain inundated, the track *via* Karli-keui, a considerable detour, must be followed. Keschan visible from here.
2½	..	..	.. ..	
3¾	..	..	.. ..	Mountain stream (30 ft. to 40 ft.) swift; stony banks; insignificant; liable to floods.
4	30	..	Karli-keui ..	Greek, 130 houses, 60 oxen, 200 sheep and goats, pigs, 65 arabas, 2,000 kiles wheat, 1,500 kiles barley (average yield). Stabling for 15 horses at khan. Plenty of hay made in adjoining country. Village, on side of hill, very scattered; hill 500 ft. Brook runs through village—dry at times; water procurable from near.
				From Kyskapan the track winds through low (by no means dense) scrub, juniper, thorn, &c., round the foot of Pirigos (900 ft.), and 2¼ miles out descends

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				into a low plain. Keschan direct track branches here to left. Track bad over plain; skirts copse; very heavy from here to Karli-keui; bad gradient in village.
1¾	..	..	.. ..	Mountain watercourse, steep banks.
1¾	..	..	.. ..	Mountain watercourse, steep banks, descending spurs of hill obliquely. Bad gradient, 6°.
½	..	..	.. ..	Enter plain.
2	..	..	.. ..	River 3 ft. 6 in. deep. Sandy banks, 1 ft. to 5 ft. Sandy bottom. Current 2½ to 3 miles per hour. This river runs along the foot of range of hills, on spur of which Karli-keui stands. It is about 50 ft. across, and usually fordable.
2½	..	..	.. ..	Reach foot of low hills bend to right. Down, sparse thorn scrub.
4½	..	..	.. ..	Scrub ends. Rivulet in shallow valley in downs.
5½	..	..	.. ..	Seyili, or Sili-keui, lies to left of track. Greek village, 50 houses. One mill, situated in rich country. Telegraph 1 mile left, 270 ft. Commence gradual descent.
7	..	..	.. ..	Mountain stream crossed near entrance to plain. Steep banks, getting steeper and higher up stream. Mountains, on spur of which Keschan stands, 2 to 3 miles to right.
8½	..	..	.. ..	Brook.
9½	39½	..	Keschan ..	Centre Keschan. This town is a great telegraphic centre. Line from Enos, one wire; from Salonika (in connection with Italian cable, &c.) two lines, one wire and four wires; from Gallipoli (communication with Smyrna) three wires. Line *via* Usunkopru and Hafsa to Adrianople, one wire; line *via* Haireboli and Baba Eski to Adrianople, one wire; line to Malgara, Rodosto and Constantinople, two wires (one only goes as far as Malgara). Operator speaks French and transmits in Morse. Population—Greek, Turk, and Armenian—4,000 to 4,500. Houses, 1,200; stone, upper storey wood, and wooden houses. It is said to be very healthy, and is situated in a rich country. Commerce in cereals, *viâ* Enos and *viâ* Ibratchi. Dependent villages about 30 (information of doubtful value), rich in corn, hay, and herds; about 200 oxen per village, and a good many sheep in neighbourhood. Height 450 ft.; hill at east extremity 600 ft. Water supply good. Stabling for 40 horses at khan.

Keschan stands on a plateau formed by a spur of a low mountain range, 900 ft. to 1,000 ft. There are streams to the S. and W. in front of this plateau, which forms an admirable position, having a clear frontage for miles towards Karli-keui and Ipsala, and apparently commanding the open and cultivated country towards Usunkopru. It would be a very strong strategically-offensive position to oppose an advance from Enos, and till taken would debar any advance along the direct route to Usunkopru and necessitate a watching force on the Ipsala—Usunkopru route. The plateau is apparently cultivated (under snow), but there is down within a mile or so in all directions from the town suitable for camping-ground, and water is apparently abundant.

On leaving Karli-keui, the track is bad out of the village as to surface and gradient (up to 7°); it is, however, possible to skirt the base of the hill without entering the village. In 1¾ miles it enters a plain of sandy soil, but liable to floods; after crossing the river, the track ascends from the cultivated plain to low scrub covered downs.

An undulating country of this sort with low cultivated hills and valleys here and there, but mostly in grass with tchifliks at intervals, extends westward hence, all the way to the edge of the flat valley of the Marizza. Track up to 5½ miles ascends very

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Distance.			Name of Place.	Remarks.
Intermediate hours.	—	Total hours.		
				gently, being of hard surface and over perfectly bare open treeless country, after slight descent to 7 miles it rises up a long hill to Keschan, where owing to cultivation it is of worse surface gradient, nowhere above 3°. Tracks lead from Keschan to Ipsala, Malgara (described as over mountainous country, and of not good surface or gradient), Usunköpru, and Haireboly. The best route to Adrianople is *viâ* Usunköpru.
2	..	..	Baschäit ..	The first village on the track (a projected road is to follow this line approximately) is said to be situated on a watershed, and at a considerable height the track is reputed to descend by easy gradients.
1	..	..	Maltepe ..	Second village; there is here a stream said to be always fordable, and a considerable hill (on which side is not known), new road laid out to ascend by easy gradients.
2	..	..	Alat-keui ..	Next village, track said to be on high open ground to W. of valley.
½	..	..	Kadi-keui ..	Kadi-keui is next village. There is here a considerable stream or small river, being the upper part of the Karabunar-dere, said to be always fordable.
1½	..	..	Karabunar.. Kawedji-keui	Karabunar. There is here the biggest stream on the route, and no bridge has been constructed, though it is intended to do so, this stream is almost always fordable.
2	..	20 to 21	Usunköpru*	The track is said to be a good country track throughout, with no serious obstructions. A new road has been commenced, but only consists of the trace and some earthwork near Usunköpru. A road is designed to run from Adrianople to Gallipoli *viâ* Usunköpru, presumably this one, if so passing *viâ* Keschan instead of *viâ* Malgara. Of the length from Usunköpru to Gallipoli 120 kilometres, 7 are said to be complete. From Usunköpru to Adrianople the track is identical with that previously described.

* Distance, 71 to 72 miles = 39½ + 31½ or 32½; total distance to Adrianople, 104 to 105 miles.

Inclosure 6 in No. 31.

No. VI.—REPORT ON TRACK FROM KESCHAN TO IPSALA.

Route traversed and examined January 29th and 30th. January 29th, gale, light snow; a few streams bore horses. January 30th, heavy snow storm, drifts very deep; 7 hours to travel 10 miles.

Distance.			Name of Place.		Remarks.
Intermediate miles.	Total miles.	Total hours.			
					Keschan to Ipsala.
1	1	..	..	..	Telegraph (Salonica), 4 wires cross obliquely.
1½	..	..	..	..	Enter valley. Fountain, right. Stream 25 feet, 5 feet to 6 feet deep. One arch bridge, 12 feet span, flat, 15 feet roadway, good order. Banks steep, 5 ft.
1½	..	..	..	..	Bridge , bad for heavy guns, 15 feet

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				across, 12 feet roadway. Banks of stream low, paved causeway beyond, fair order.
2¾	..	..	.. ..	Brook 5 feet bridge-roadway 10 feet about, good order, causeway. Telegraph (Salonica), 1 wire to right.
3½	..	..	.. ..	Jenije-keui, Turkish village, consisting of 8 or 9 tchiftliks, 50 oxen, 400 yards, left. Track, up gentle slope of perfectly open, hilly down and cultivation.
5½	..	..	.. ..	Top of ascent, summit of hill (540 feet) a little to right. Down.
5¾	..	..	.. ..	Fountain. Rivulet small. Slab-stone bridge, good order, track winding round side of hill.
6	..	..	.. ..	4 and 1 wire lines of telegraph cross track together, and run parallel to each other 30 or 40 yards apart.
7½	..	..	.. ..	Gentle descent over down, and then cultivation to stream running in long, shallow valley. Marshy banks, stream apparently deep (frozen), if swollen would require bridging, reputed ordinarily fordable.
7¾	..	..	.. ..	On ridge (450 feet) above, a large track of bare, cultivated, gently sloping country. Keep along ridge to left, and then bend to right, crossing four brooks.
9½	9¼	(5½, snow drifts.)	Kurudji-keui	Greek village, 80 houses, 2 mills, 50 oxen, 60 arabas, 2,000 kiles wheat, 1,000 kiles barley (average yield). Very scattered village on spur of hill above plain. Stream round base of hill. Good water at all times. Large, rich, Greek village, Boyindi or Buidikeui, 200 houses, visible to N.N.E. One hour distant. Height, in parts, of Kurudji, 500 feet. Hill about 1 mile distant, 550 to 600 feet. The track leaving Kesehan descends the slope of a cultivated hill planted with vines, &c., by easy gradients for 1½ miles, soil slightly sandy, track rather deep, between banks much scored, country perfectly open, spurs of gentle contour, up one of which the track after crossing low, marshy valley, ascends. Down, sparse scrub, and cultivation. At 5½ miles ascent ends, and track winds round hill, descending gradually to stream at 7½ miles, whence it rises with gradient of about 3° on to ridge, and keeping along high ground reaches Kurudji Keui by detour, another track running straight to it across the cultivated valley, but being of steeper gradient and heavy in wet weather. The track is of fair surface throughout, worst from 7 miles to 7½ miles, and very bad at the stream.
1	10¼	Times useless.	.. ..	Reach valley, crossing 4th small brook; these with steep banks and deep beds.
2¼	..	..	.. ..	Village, 2,000 yards right (200 feet). Greek. Idirkeui, 30 to 40 houses. To left, hills immediately above track, 150 feet to 250 feet above it. To right, stream, marshy ground, and low, gently rising, cultivated hills beyond. Valley very swampy, marshy near stream.
3½	..	..	.. ..	Track to left up valley into desolate, scrub-covered country. Marsh, and reeds, and pools in valley.
5	..	..	.. ..	Track from 4½ miles clear of floods, and of very hard, sandy surface.
6½	..	..	.. ..	The marsh now is of considerable extent to the right as the valley debouches into that of the Marizza. Hills to left as before. Stone causeway across marsh to right, with bridges and openings through it showing at intervals through floods.
8¼	..	..	.. ..	
				Floods.
				Floods.
9	19¼	12½ (snowdrifts and deep snow).	Ipsala ..	Large Turkish and Circassian village. Track, leaving Kurudji-keui, descends hill for a mile, and enters a valley, being, for the first 2 miles enclosed by banks, and much scored. It is in wet weather very heavy and deep up to 3 miles, after that it improves. It follows the course of a long winding valley up to 8 miles from Kurudji-keui,

TIME & EYE SKETCH OF ROUTE

FROM

KESCHAN TO IPSALA

Scale 2 Miles=1 Inch

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				winding under the base of steep, scrub-covered hills, with a stream to its right, and gently sloping cultivated hills beyond. At 8 miles, it turns to the left round the hills to Ipsala. From 5 miles to Ipsala it is as good as a metalled road, and would be good in any weather. It is, however, low lying and liable to floods. Practically flat throughout from 1 mile.

Enclosure 7 in No. 31.

No. VII.—REPORT ON ADRIANOPLE.

Ground examined and sketch made on parts of Feb. 4th and Feb. 7th. Country under deep snow.

References to 1.—Bridge sketches.
2.—Kirk-Kilissi route. Time and eye-sketch.
3.—Usunköpru route. Time and eye-sketch.
4.—Tabular statement of roads.

Introductory.

The following report upon Adrianople does not treat of any considerations as to its population, food, and water supply, capability of furnishing provisions and transport on requisition, or any such statistics, more reliable information as to which could, of course, be furnished by the British Vice-Consul at that city.

Apart from any consideration as to the moral effect likely to be produced by its occupation by an enemy or the material value it might be to him, and though this report has little to do with its well known topographical position as regards the Marizza and Tunja Valleys, the Balkan Range, and the country east and south of which it is the key, it may not be amiss to state that it is a point of the highest strategical importance—

Position as to roads and tracks.

(*a.*) Because, not only does it stand upon the junction of nearly all the most important tracks of this part of the empire,

(*b.*) but also because, as will be seen from the tabular statement (fowarded herewith), nearly all the projected and partially or wholly completed roads in this portion of Turkey radiate from this point.

In fact, the coast track from Burgas is the only line from north or west towards the capital that does not pass through or near this town, as even a force advancing from Burgas *via* Kirk Kilissi must, unless using the indifferent mountain track from the latter town *via* Skopelos, either advance on Adrianople or branching from the Adrianople—Burgas road still pass within 20 miles of the city.

Thus Adrianople stands—

1. Upon the railway to Constantinople and to the sea at Dede Aghatch.
2. Upon the great military road running to the Servian frontier, *via* Philippopolis and Sofia, and certainly metalled as far as the former place.
3. On the track and projected road to Schumla, *via* Jamboli, and thence to the frontier.
4. On a track and projected road, laid out with good gradients, &c., between the Marizza and Tunja to Karabunar and Kioshunja, the former town on the rail.
5. On the track and projected road to Burgas and Achiolo, *via* Karnabat and Aidos, said to be, in its present state, practicable for a rapid advance of all arms in fair weather.

6. On the track to Kirk-Kilissi.
7. On the road to Baba-Eski, and thence by road and tracks to Rodosto.
   Kirk-Kilissi, &c., on the road to Stamboul.
8. On the projected road to Gallipoli, *via* Usunkopru and the branches to
   Keschan, Malgara, Enos, &c.
9. On the projected and partly completed road, *via* Ourli to Demotika
   and Dede Aghatch, designed, it is believed, to pass along the coast,
   via Gumuld-schina and Kawala to Salonica.

Sketch.

The sketch herewith forwarded illustrates, without further description, the position of the city as regards the rivers Tunja, Marizza, and Arda. The whole of the country round is excessively open, but in the plain one does not see far owing to fruit trees, &c. The town itself stands on the slope of hills above the Marizza as shown, and the sketch was made with a view to illustrate its capabilities of defence against hostile advance from the north and west.

Defensive capabilities.

Nature of rivers.

Although it may appear, from the size and position of the rivers, that they form admirable points *d'appui* for the flanks of forces taking up advanced positions, even if rendering such positions merely strategically defensive, it seems by no means certain on examination, that while but a small obstacle to the attack, converging as they do at this point, they would hamper and obstruct rather than aid the defence at such seasons as an enemy might be expected to attack. All these three rivers are fed by mountain streams and partake of their nature, and in summer are all fordable. (It is said that in dry summer weather a man can walk across the Marizza just below the bridge without getting wet above his knees). Even, if tolerably full, they might be but a slight obstacle to an enemy who would cross one of them above, while a defender, moving on interior lines, would continually require to cross all three.

Marizza-Tunja position

The sketch shows to the west a cultivated plateau, commanding completely the two great lines to the west, rail and road. The plateau is separated by a small stream from the wedge-shaped spur that fills the remainder of the ground between the Tunja and Marizza, and which slopes gently to the east, and blocks the road and track to Karabunar, while it completely commands the Schumla road.

It appears possible for a force to take up a strong position between the Tunja and Marizza. The first point to hold appears to be an eminence beyond the bridge and above the village of Kadi-Keui. It has a shallow valley in front, is not commanded by the ground beyond, and has a clear frontage of 1,500 to 2,000 yards.

The next point is two miles distant from it, and the communication along the reverse slope of the ridge is covered almost throughout. There is hereabout the same clear frontage as before, and it has a clear field to the north, and is not (it is thought) commanded by any of the ground in that direction. A spur, running from this point, could be occupied by a minor work, which, if behind the crest, would, it is believed, be well defiladed. The next point to be held is across the valley, and commanded by ground about a mile in front, which would not be tenable while the fire of the works on either side of the point in question was unsubdued, and this ground to its front covers it from the slope of the mountain to the north-west. The flank of this position is on an eminence less than a mile from the Tunja. The hills throughout are of gentle contour, except above the Philippopolis road, where they are rather steep.

The whole of the ground in front of the position is cultivated bare and treeless. The plateau to the rear of the position is cultivated throughout, and covered with fruit trees. The communications are very good, several broad sandy tracks from the city traversing it; these form natural roads. There is also plenty of lateral communication by good and sandy tracks.

The plateau appears to afford good camping ground, and the water-supply on it in winter is good. The extent of this position is from 6 to 6½ miles from river to river, the line occupied rather less; it is considered that 20,000 men would suffice for its efficient defence.

Arda-Marizza position

It will be seen from the sketch that there is a ridge of hills filling part of the ground between the Arda and the Marizza, and it is considered necessary on this account to include the occupation of this ridge in a project of defence. Did these hills not exist, a force disposed on the Marizza—Tunja position in possession of means of crossing the rivers by fords, trestle bridges, &c., could defend the position efficiently by threatening the flank of an enemy who has crossed the Arda to the

west and was advancing on the town; and in the case of floods, the position though only defensive, would be very secure. As, however, an enemy will presumably at best be only able to utilize the rail as a road, he would, under existing circumstances, make a detour, completely covered by the hills in question, of which he would take possession. The ridge, having open down-land on top, is very narrow near the confluence of the rivers, and the place has been selected, as any further advance would extend the position very much. It is a very strong artillery position, having a clear frontage of 1,500 to 2,000 yards, or more, along the ridge, which is bare down with steep sides, more especially to the south, and seeing indefinitely over perfectly flat, low plains on both sides, cultivated, and liable to inundation. Immediately in its rear, the ridge falls away; and on these reverse slopes reserves could be massed, that in the plain would be exposed to an enemy's fire from the ridge. This point is within artillery range of the point on the position across the Marizza. Of course, in dry weather, the defenders would require numerous trestle bridges, &c., to connect the positions; these communications, however, unless well to the rear, would be much exposed. It might happen, that in rainy seasons, this would be a perfectly isolated position; in which case, however, its extent would be diminished and its flanks secure.

The communication to the rear is across the Arda bridge, and is a single line only; other bridges would be requisite. Water-supply in village of Maraseh. It is considered that this is a point suitable for a strong artillery position, and that 5,000 men would be sufficient for its defence.

Northern or Schumla road position.

Precisely the same arguments apply to the question of occupying the hills to the north of Adrianople, for although the Schumla road is completely commanded by the Marizza Tunja position, a detour, so as to be covered by the hills shown, would enable an attacking force to occupy the hills immediately above the city. The hills shown are of steeper contour than even those of the Arda—Marizza position. The first point proposed for occupation is within artillery range of the flank of the central position; it commands all the ground to its front, and must have a clear frontage of over 2,000 yards. The next point (750 feet) is rather salient; it is distant about 1,500 yards from the last, and has a clear frontage over open undulating country and a great command, and like the last point the slopes from it are very steep and slightly rocky, a stream, 3 to 4 feet deep, with steep banks, being immediately below it. It commands everything within artillery range, and the hill-top is broken ground, giving natural cover.

1¾ miles from this is another point, having clear frontage over the plain. It is marked by a tumulus. The hills still have a steep rugged slope to the front.

E by S is a point which, if not included in the position, would be surely occupied by the enemy; it does not command the point under consideration, and the city is screened from it by hills although possibly actually closer to it than shown on the sketch; it is believed that only the more distant, if any, parts of the city could be reached by any but mortar fire from it.

It is not known if an extended position could be selected here. The ground here is part of the plateau or table that slopes to the Marizza; is cultivated and planted with fruit trees towards the city, down on the ridge already described.

1½ miles from last point is a slight eminence with a clear frontage, certainly of a mile, and commanding the ground across the valley; 1 mile from it is another point to which the same remarks apply, and this spur generally commands that opposite, and has a steeper slope towards the valley between them. It is estimated that the position to be occupied here would be 5 miles in extent, and require 15,000 men to defend it. Although the aggregate number of men for the three positions is thus taken at 40,000, it is by no means apparent that an efficient defence could not be attempted with less. Thus with the central plateau strongly held, and the other positions lightly held principally with artillery, an enemy would be obliged to develope an attack that would permit the defender to change the disposition of his forces to resist it.

Apparent weakest point.

The town is probably most vulnerable by a force advancing along the Burgas and Schumla routes.

Remarks on sketch. Bridges, roads and tracks.

Remarks on the sketch.—The bridges, the number and approximate position of which are shown, are described in a separate report. Of the roads and tracks, that to Constantinople has been described; also that to Usunköpru; that shown as running to the station is a flat macadamized road; there are two bridges on it, one close to the Marizza bridge, a 4-bay wooden bridge over a watercourse, dry except in rains; 24 ft. roadway, solid stone piers, 20 ft. to 24 ft. spans, good order; the

other crosses a similar watercourse near the station, three 24-ft. bays, stone piers, roadway 24 ft. and 10 ft. above watercourse, good order. It runs thence *via* Ourli, Demotika, the road to Philippopolis, and thence to the Servian frontier, leaves Adrianople as a good macadamized road of varying width, 20 ft. to 30 ft., and is nearly level up to 3½ miles; is commanded on the right by hills 100 ft. to 150 ft. above it, of steep, sandy, loamy slopes; on the left is a flat plain to the Marizza, full of fruit trees, &c. At 3½ miles there is a one-arch stone bridge, 20 ft. above a steep-sided watercourse, with insignificant brook running through it. Roadway 20 ft., thickness of arch at crown 3 ft. to 4 ft., 30 ft. span, bridge 30 yards across. After this the road is flat and straight, through a perfectly bare cultivated country, with the river on the left. This is metalled as far as Philippopolis. (For details and branches *see* table.)

The road to Karabunar* is only laid out, some of the earthwork is completed, the metalling in heaps by the roadside; 5 kilos. are said to be completed.

The Schumla—Jamboli road is also macadamized, but between 4 and 5 miles from Adrianople the metalling ceases, and only the earthwork is complete; metalling, in places, in heaps alongside. At 3½ miles is a 3-bay wooden bridge with stone piers, roadway 20 ft. or 24 ft., stream 3 ft. to 5 ft. deep, steep banks. The road, as shown, winds along the base of hills, about here steep and rugged, as described in report of position, from 4 to 5 miles is a gentle rise, and thence it runs over open undulating country. The Burgas road leaves Adrianople by existing track, with bad gradient and surface that in wet weather is deep and muddy. It is, apparently, only partially laid out, metalling beside road in places. It is, doubtless, fair on the high ground above and the sandy soil of the plateau, but cannot, it is thought, cross the mountains, streams, &c., between it and Burgas as anything but a track, possibly passable for arabas, as the only good route from Burgas to Adrianople is said to be *via* Jamboli and the Tunja Valley. (*See* remarks on table.)

Telegraphs. The telegraph lines from Adrianople are two lines (2-wire and 3-wire) along the Philippopolis road, 3-wire line across country to Jamboli, 2-wire and 3-wire line along Constantinople road, 1 wire to station, 1 wire to Usunköpru.

Garrison. The garrison is merely part of one battalion of reserve troops (? redifs), and a squadron of cavalry.

Barracks, Hospital. There are two large barracks, one capable of holding 4,000 men (apparently much dilapidated), the other about half the size. There is a large military hospital.

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* This road runs between the Tunja and Marizza, crossing the former river by the bridge below the old seraglio, it passes close to the barracks, and descending from plateau crosses a stream between 2 miles and 3 miles out by a rough wooden bridge, with stone abutments (requires strengthening for heavy traffic), and runs thence over the bare cultivated slopes shown in sketch.

HASTY SKETCH
OF ADRIANOPLE & ITS ENVIRONS
TAKEN BY TIME, EYE, COMPASS & ANEROID

Scale of 1 inch to a mile

PUBLIC RECORD OFFICE
Reference —
F.O. 424
38
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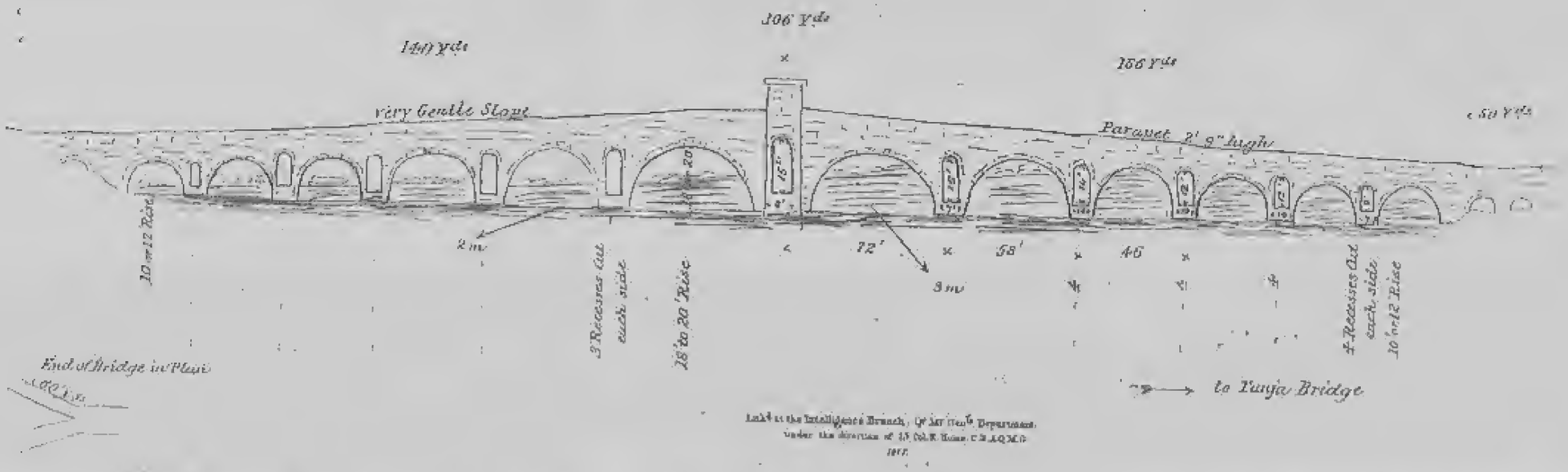
STONE BRIDGE OVER RIVER MARIZZA AT ADRIANOPLE

(Excellent Order)

Arches round, large and slightly ogive.

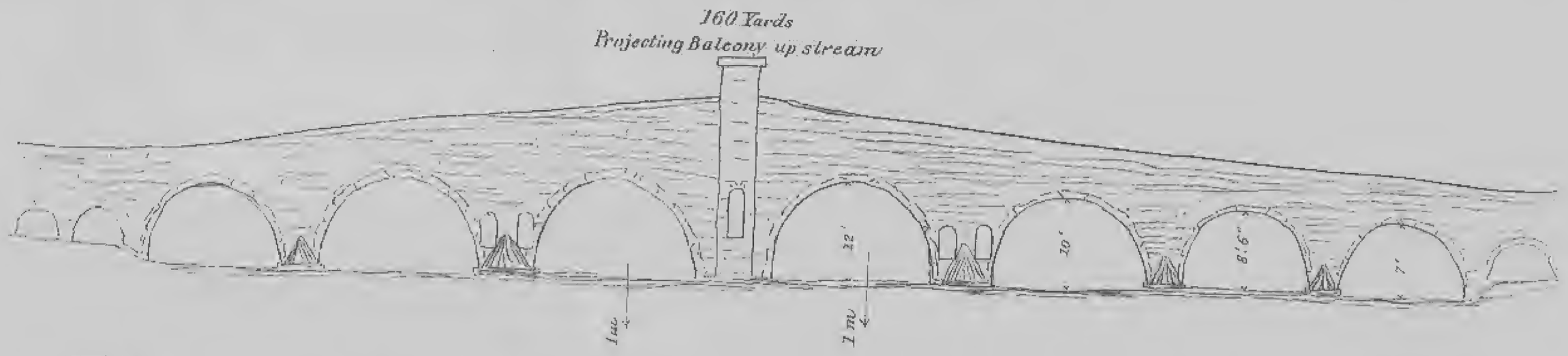


Added to the Intelligence Branch, Qr Mr Genl's Department, under the direction of Lt Col R. Home, C.R.A.Q.M.G. 1877.

This bridge is built very solidly in Stone with arches through the piers for additional waterway as shown. Stream running (February) 2 and 3 miles an hour. Roadway 24 wide - 27 overall. Thickness at crowns of arches about 2 6. 306 yards across and distant 370 yards from Bridge (in prolongation) which is 160 yards long. Banks sandy with steep usually 8 to 10 above stream. Rise of river 8 above level shown in floods.

The interior walls of the arches on the piers are all cased with recesses on both sides, which are of varying size and not very regularly cut. on the Adrianople side these extend vertically almost to the crown of the arch, and would serve as chambers if the Bridge was to be demolished.

No. I. BRIDGE OVER THE TUNJA AT ADRIANOPLE.



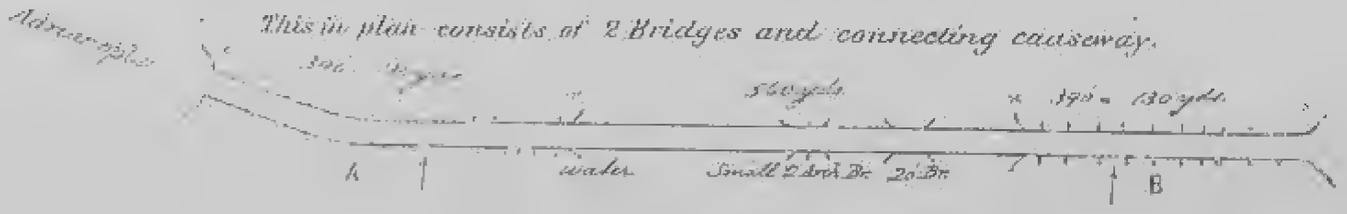
This bridge is of stone, in excellent repair and of elegant construction. The piers are very thick, the solid ones 12 to 16, the others 24, width of Roadway 22, width of Bridge over all 25, the stone parapet is 3 high, crowns of arches about 3 thick. The arches in the piers for additional water way are suitable for placing charges for purposes of demolition. the Stream is sluggish about 1 m. per hour, the banks sand and mud and about 5 high, the depth of water insignificant (except in rains) being nowhere except perhaps near arches 6 deep (February), and the Stream easily fordable in dry weather. This bridge on the road from Adrianople to the Railway Station is 160 yds. long, a stone paved chaussée 570 yds. long with houses on either side connects it with the bridge over the Marizza.

Lith.d at the Intelligence Branch of the Head Quarters
under the Direction of Lt. Col. R. Moore, Cambridge

Nº 2 BRIDGE OVER RIVER TUNJA AT ADRIANOPLE

BEING THE 1ST UP STREAM FROP THE MARIZZA_TUNJA BRIDGE AT THAT PLACE

This in plan consists of 2 Bridges and connecting causeway.



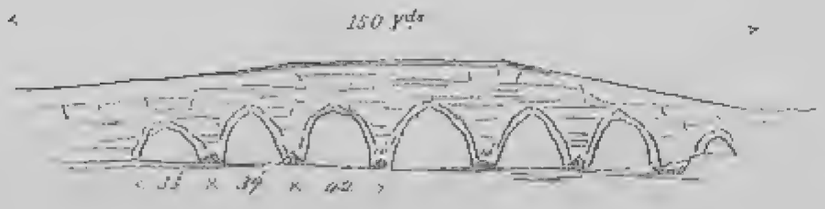
[illegible] is an irregular stone bridge of 17 arches of Spans 10' to 15 and up to 30, water running [illegible] Feb 7). It is of about 20 Roadway with a high stone parapet 4, it is very solidly [illegible] fair repair. The piers are so thick that it would be difficult to destroy efficiently [illegible] are small and the crowns of the arches very thick. Large charges would be necessary. The causeway has 2 openings or bridges in it as shown. The bridge beyond the causeway spans a channel probably once the main bed of the stream now completely [illegible]

The arches are very flat with very thick crowns, and the piers are very thick; the bridge and [illegible] construction, is in fair repair throughout being situated on the Adrianople Philippopolis Road.

Lith^d at the Intelligence Branch, Qr Mr Genl's Department,
under the direction of Lt Col. R. Ross, C.B. A.Q.M.G.
1878.

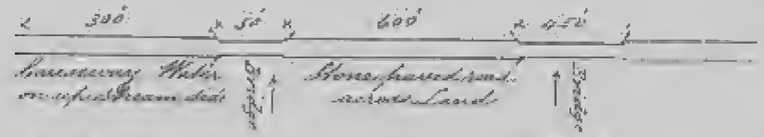
No. 3 BRIDGE OVER RIVER TUNJA AT ADRIANOPLE

BEING 2ND UP STREAM FROM THE MARIZZA-TUNJA BRIDGE AT THAT PLACE.

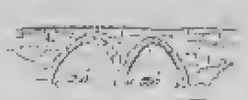


Arches 10 to 12 Rise slightly ogive
Roadway 20 wide, 23 [illegible] Parapet
Starlings projected up stream.

This bridge in plan is



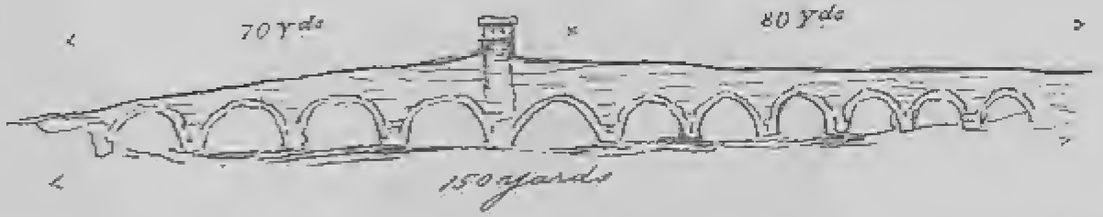
The smaller bridge has



2 arches of some 20 Span being 50 across. Both have paved roadways [illegible] of arches. The Tunja is here a by no means rapid stream and is shallow except in [illegible]. Good repair throughout. Water through most of arches (February

Lith. at the Intelligence Branch, Qr. Mr. Genl. Department
under the direction of Lt. Col. R. Home C.B. A.Q.M.G.
1877.

No. 4 BRIDGE OVER TUNJA AT ADRIANOPLE.



This is a solidly constructed stone bridge of 11 arches, 7 one side of centre of Stream, 4 on the other. The Tunja is here a swift stream as there is a weir just above the bridge, banks low, water not filling all arches (February). Roadway 20'. Parapet 4'. It is constructed like most ancient bridges with a great waste of material, and would be difficult to demolish efficiently. The abutments, piers, and crowns are thicker than those of No. 3, to which however the same remarks apply generally. Both these bridges are in the town No. 4 just at the outskirts. They close no important road, but that to Karabunar will pass over one of them.

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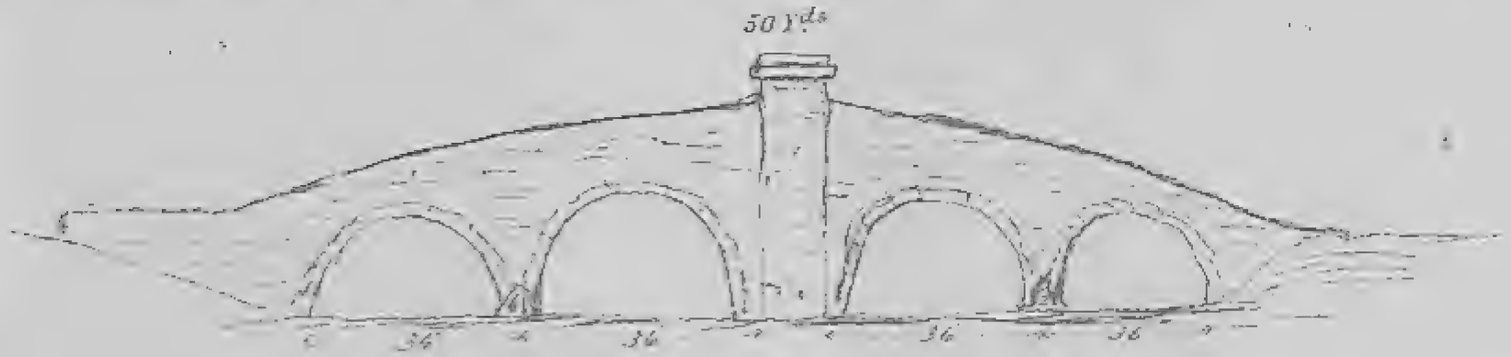
under the direction of Lt Col. R. Home C.E. A.Q.M.G.
1877

No. 5 BRIDGE OVER TUNJA AT ADRIANOPLE

BEING THE 4TH UP STREAM FROM THE MARIZZA-TUNJA BRIDGE AT THAT PLACE.



This is a stone bridge some 50 yds. across leading into the grounds of the Eski-Serai or ancient Seraglio. The roadway is 20 wide 14 only available for wheel traffic.

The arches are of 30 to 35 span and 14 or 15 rise. The bridge is solidly built in stone, paving [illegible] and the camber considerable. The bridge is of ancient construction and in good [illegible]. The [illegible] is here sluggish and the banks some 5 high. Willows on bank and fair [illegible] grounds. The bridge lies to the left of the Shumla road, a paved cause- [illegible] leading thence to it, over low swampy ground.

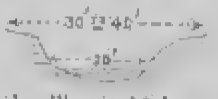
Lith^d at the Intelligence Branch, Q^r Mr Genl Department under the direction of Lt Col. R. Home C.B.A.Q.M.G.

Inclosure 8 in No. 31.

No. VIII.—REPORT ON TRACK FROM ADRIANOPLE TO TCHATALDJA, *via* KIRK-KILISSI, WISA, SARAI, &c.

Route examined and traversed, February 8th, 9th, 10th, 11th, and 12th. February 8th: Strong wind, snow morning, heavy rain afternoon, country under snow, streams frozen. February 9th: Frost, sun, strong very cold wind, streams frozen. February 10th: A gale, fine, streams frozen. February 11th: A southerly gale, came into thaw, fords said to be impassable on this account, no guides procurable, line taken apparently correct. February 12th: Fine, sun, less wind.

Distance.			Name of Place.		Remarks.
Intermediate miles.	Total miles	Total hours.			
					From Adrianople, via Kirk-Kilissi, Wisa, Sarai, to Tchataldja.
					Leave town by Stamboul-yol, or Constantinople road.
1	1	..	..	..	Leave town, houses on right, road 40 feet wide, metalling 20 feet; a two-wire telegraph and a three-wire telegraph accompanying it. Low cultivated hills, on slope of which stands the city, to left, plain to right.
1¼	..	..	..	..	Bridge, wooden, stone piers, 2—10-feet bays, good order. Stream shallow, deep bed, steep banks.
2	..	..	..	..	6-feet slab-stone bridge, good order. Tchiftlik 600 yards right, in cultivated plain, covered with fruit trees, extending to Marizza. Low hills, 600 yards left.
3	..	..	..	..	Bridge, wooden, stone piers, 2—10-feet bays, roadway in bad order. Shallow 20-feet stream, with 2-feet or 3-feet banks.
4¼	..	..	..	..	Road touches hills to left. Wooden bridge, stone piers, 2—20-feet bays, in good order. Dry bed of stream, banks 10 feet to 12 feet deep. Two houses roadside branch track to right to Usunköpru.
5¼	..	..	..	..	Wooden bridge, stone piers, 3—15-feet bays, 9 feet above stream. Dry watercourse, low banks. Branch track right to Usunköpru; branch track, left, to Kirk-Kilissi. The Stamboul road ascends the hills straight in front. House at roadside.
5¾	..	..	..	..	Fountain to right.
7	..	..	..	..	Track ascends to table land (450 feet), sandy, scored, steep gradient.
8	..	..	..	..	Iskandar-Koui, Turkish village (360 feet), 2 or 3 tchiftliks and a few houses, 20 in all. Descend into valley. Land cultivated all round village.
8¼	..	..	..	..	20-feet stream, shallow, sandy; banks, from 2 feet to 6 feet (sloping). Brook just beyond slab bridge, Tchiftlik 2 miles left.
9¼	..	..	..	..	Rises from valley to 480 feet. Down commences.
9¾	..	..	..	..	Small brook.
11⅛	..	..	..	..	Brook (410 feet), over undulating grass. Country with an almost imperceptible slope to the south.
11⅛	..	..	..	..	Stream (400 feet). Village of Ohnecha. Turkish



					tchiftliks and Greek village, 40 houses, 3 miles right.
14¼	..	..	..	..	Two sandy rills, probably dry in summer. Tchiftlik 1½ miles to left on high ground.
15	..	..	..	..	Wooden bridge, stone abutments, in bad order, over 20-foot stream, 2 feet deep. Banks 8 feet to 10 feet.
15¼	..	..	..	..	(560 feet.). Brook, 2-foot banks.
15½	..	..	..	..	Brook, small stone bridge, good order.

Distance.			Name of Place.	Remarks
Intermediate miles.	Total miles.	Total hours.		
16	16	4½	Khaj Keui, or Mahmoud Pacha Keui.	Turkish, 60 houses. Good water supply. Reputed rich, several tchiftliks. Situated on west slope of a long broad valley, with a stream just in front (500 feet). About 1¼ miles to left, up valley, is a small village, or cluster of tchiftliks, about 15 houses; and 2½ miles to left, up the valley among trees, is the Turkish village of Terkesili, 40 or 50 houses. The valley is broad, rich and well watered.
				The road from Adrianople for the first 5 miles is the Constantinople *chaussée*, perfectly straight, and of good design, but falling into bad order for want of repairs. It is commanded up to this point by low hills to the left, within musketry range to the right is the Marizza plain. At 5¼ miles branch track to the left, rising on to a vast plain or table sloping slightly to south, leads to Kirk-Kilissi. Up to Ikkendar-Keui this vast table or plain, which forms all this part of the interior of Rumelia, is cultivated, and the track naturally of sandy good surface, therefore bad in parts. After this it runs over perfectly open, treeless grass country, of sandy and gravelly soil, with good gradients.
¼	16¼	..	.. ..	Wooden bridge, very solid stone piers; 3 bays, roadway fair order. Stream 20 to 30 yards across, swift, sandy, 2 feet deep, banks 6 feet deep in places, easily cut down.
				Fountain, minarets of Adrianople visible, shut out beyond this (600 feet.)
2	..	..	.. ..	Stream, 1 foot deep, banks steep, but broken down (510 feet). Tchiftlik 1,200 yards to right. Down.
3½	..	..	.. ..	Brook. Down, sparse thorn scrub.
6½	..	..	.. ..	Rill.
6¾	..	..	.. ..	Brook, steep banks in places (580 feet). Scrub on down; swampy valley, rill, track deep, good for last 5 miles. Across downs with sparse scrub crossing four small rills or brooks to height (580 feet) on steep looming sandy hills, rising abruptly with double ridge above wide valley.
7¼	..	..	.. ..	
11	..	..	.. ..	
14½	27½	7½	Tenijo-keui	Descend by deep (loam soil) track with bad gradient to village (Bulgarian), 500 houses, water good, situated in broad cultivated valley, 2 miles up which to left on the same side of the river lies another large Bulgarian village (Kuinginour), 250 houses.
				The track on leaving Khaj-keui ascends a steep hill to plateau, running thence over undulating down country, with thorn and oak scrub, in parts to Jenija. The country is for the most part treeless and perfectly open. Many herds of sheep and goats (as is the case throughout the villayet, there being in all, as computed from the tax, from 5,000,000 to 6,000,000 head.) Track throughout of generally good sandy or gravelly surface, usually bad in dips and hollows. In summer traffic would be practicable all over the country.
¼	..	..	.. ..	River 2 ft. 6 in. deep, 50 yards wide, torrent bed of sand and boulders, 150 yards wide. Three-arch stone bridge over spanned channel; two arches remain.
				Plateau game (700 feet.)
1	..	..	.. ..	Across plateau, almost dead level down and cultivation.
2	..	..	.. ..	Shallow valley.
				(700 feet.) Pool. Shallow valley, scrub.
4	..	..	.. ..	Kirk-Kilissi visible. Plateau cultivated, and thorn
5½	..	..	.. ..	scrub (580 feet). descent commences.
6¾	..	..	.. ..	Kara-khidir, Bulgarian village, 200 houses, on cultivated plateau above gentle slope towards a stream
7¼	..	..	.. ..	to east. Water supply good.
				Traces of paved road. Trees.
7¼	..	..	.. ..	Bridge, stone piers, 12-ft. span; brook, 10-ft. banks.
7¾	..	..	.. ..	Meet macadamized road from Baba-Eski. Telegraph
9½	..	..	.. ..	alongside.

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
10	37½	9¼ Travelling without luggage	Kirk-kilissi	Town of Kirk-kilissi.
				Track from Jenije ascends, rises obliquely without excessive gradient, and runs thence over plateau, part cultivated, part down, with but little water on it, to Kirk-kilissi. It is of good surface throughout. In summer but little water is probably found on the plateau throughout from Adrianople, except in the valleys, where there are villages.
				Kirk-kilissi (700 feet) is an important town, situated on the southern spurs of the mountainous country that extends northward from here to Burgas and the Black Sea. Southwards is a vast open plateau or table in down and cultivation. Statistics as in Route . Houses, 3,000, mostly wood; population, 500 (Turks), the remainder Armenians, Greeks and Bulgarians, principally the latter. Oxen and buffaloes, 350; sheep and goats, 3,000; swine. Horses, 200 to 300. 10,000 kiles each of wheat and barley (average yield). Wine, 40,000 oke (1 oke fluid measure equal ¾ quart about). Water supply always good; a small stream running through the town. 15 fountains, 300 wells. Stabling for 20 horses at khan. Telegraph—1 wire from Baba-Eski, and on to Wisa; transmission Turkish. Dependent villages, 33, mostly Bulgarian.
				Quarries towards Lule Bergas.
				Tracks from road *viâ* Baba-Eski to Adrianople, 12 to 14 hours.
				Track to Lule Bergas.
				Tracks from Adrianople to Wisa. Track to Uskub, a large Christian village or small town of 800 houses (3 hours), and so through mountains to Samakown, merely mountain track (9 to 10 hours).
1	1	..	Kirk-kilissi	Track to Varna and north *viâ* Skopelos. This is double for the first 5 miles. Northern of two tracks.
1¼	2¼	..	.. ..	Bad gradient leaving town. Brook, steep banks; small stone bridge, good order.
2	4	..	.. ..	Brook steep, banks cut away at roadway.
				Brook. Stone bridge, 24 ft. across, arch 10-ft. span; roadway 16 ft., in good order. Bulgarian village Arakiljí, 1½ mile to left front.
2½	6½	..	.. ..	Well 20 ft. down, reputed good water.
½	7	..	.. ..	Valley. Track only 6 ft. to 8 ft. wide. Dry bed of stream.
1	8	1.6 (on foot)	.. ..	(880 ft.) Cultivation no longer continuous. Rocks 800 yards to right. Bad gradient from valley.
5½	13½	..	.. ..	(720 ft.) Stream. Gradient beyond impassable for any but very light wagons. Mountain stream, 30 ft. or 40 ft. across, shallow; stones and sand.
5½	19	1.30 (on foot)	.. ..	(900 ft.) Rocky ground among mountains.
¼	19¼	..	.. ..	Southern branch of track.
				Stone bridge, 30 ft. across, 14 ft. roadway. Span of arch 14 ft., rise 10 ft. to 12 ft.; in good order. Two wells near.
2¾	..	..	.. ..	Brook, steep banks.
3	..	..	.. ..	Brook, steep banks. Stone bridge, in poor order. 16 yards across; one arch, span 14 ft., rise 8 ft.
				Bulgarian village, Inakiljia. 150 houses. Water supply not always good.
3½	..	..	.. ..	Stream. Small religious house.
5½	..	1.30 (on foot)	.. ..	Mountain-stream meets other track.
				These tracks are both of hard sandy surface, and run across a cultivated plateau, low craggy hills lying some 2 or 3 miles to right of northern track. Both are confined by banks, and in places only 6 ft. to 8 ft. wide. Abundance of stones on plateau, thrown unbroken on to tracks in places. Stone also in mountains. After 5 miles the tracks converge; the route to the north there entering the mountains is thenceforward a mountain track, unsuitable for heavy traffic, and may but the slow advance of a considerable force. At Skopelos, on an eminence, distance 3 hours from

Distance. Intermediate miles.	Distance. Total miles.	Distance. Total hours.	Name of Place.	Remarks.
				Kirk-kilissi, there is a branch track *viâ* Kalfalar (7 hours), and another *viâ* Umur Faki to Burgas, described as steep, rocky, and difficult even for arabas. There appears to be no regular defensive position favourable for covering Kirk-kilissi. The spur, that might from the sketch seem favourable, is not good, being commanded, deficient in cover, difficult ground for manœuvring, and the right flank would have to be extended indefinitely into the mountains, these being of gentle acclivity and for the most part easily passable for infantry and light guns. It is, however, excessively probable that there are numerous positions where defiles or other natural obstacles would enable a small force to defend the track efficiently, either directly or in flank. There is abundance of open ground, mostly cultivated near the town. It would be a hot and exposed situation for a camp; and, from the nature of the soil, the water supply is not likely to be good in droughts. If there be water there in sufficient quantities the lower parts of the mountains would be preferable. The country around Kirk-kilissi is open and rich, except towards the mountains. Fruit trees, &c., prevent a very distant view.
				Track leads over plateau, hills to left 600 to 800 yards, paved and bad at first; 1-wire telegraph along side. Track to Lüle Burgas to right, across open country.
				Descend by bad gradient to wide valley (590 feet), pave l causeway.
3½	40	..	.. ..	Brook, wooden bridge 12 feet, and river, Kassabar Dere, 2 feet deep, crossed by a bridge with 6 spans of 30 to 40 feet, rude wooden trussed girders, 10 feet roadway, not suitable for heavy traffic; piers, stone, 18 feet thick; fordable except in floods.
				Leave valley.
3	..	..	.. ..	(850 feet). Down; oak scrub, begins; sparse
3½	..	..	.. ..	timber, pollard oak of poor growth.
				Timber in scrub ends.
7½	..	..	.. ..	(850 feet.)
8	..	..	.. ..	Tatar-keui Circassian village, in a rather narrow
9	..	..	.. ..	valley. Very little cultivation (740 feet); 40 houses; stream sandy; small, low, marshy banks.
				Uskub Dere.
10	..	..	.. ..	Valley. Dip before. Large Christian village of Uskub, distant 2 to 3 miles up valley, sparse scrub from 9 to 11 miles. Uskub, a few Turks, Greek and Bulgarian; 800 houses; great wine country; average yield, 400,000 okes.
11	..	..	.. ..	Small river, Monastic Dere or Tehai, 50 feet across bed, 120 feet across (700 feet), 1 to 2 feet deep, swift, sandy and stony bottom. Hills beyond steeper; sandy cliffs 30 to 40 feet above stream in places; gradient up from stream bed. West hills gentle. Scrub beyond river denser, oak, juniper, &c.
				150 (900 feet) cutting. Demir Kapu Skopelos visible, Jena and Bunar Hissar forward. Hills intersected by steep ravines. Cutting 100 yards through 20-feet side. Descent begins.
11½	..	..	.. ..	Brook, insignificant banks, 8 to 10 feet across. Stone bridge, good order, arch 10 feet span and rise, roadway 12 feet. Cultivation begins.
15	53½	13½ no baggage.	.. ..	Stream (720 feet) dries.
				Track paved at first, then sandy, and of good
16	..	..	Jena ..	surface for three miles, passes through a rich open country, and afterwards runs over scrub-covered downs, often much scored, nowhere very heavy. But few watercourses, only regular streams. Distant mountains to left. Gradients good, except those

Distance. Intermediate miles.	Distance. Total miles.	Distance. Total hours.	Name of Place.	Remarks.
			Jena ..	noted. Track confined by scrub. Scrub not very dense. Pollard timber abundant. Streams liable to spates. Sheep and horses abundant. 1-wire telegraph follows general direction of track.
				Small town of 300 houses, 25 being Turk, 60 Bulgarian, the remainder Greek. Inhabitants 1,400 to 1,500. Wheat 25,000 kiles; barley 10,000 kiles; 3,000 kiles Indian corn. Oxen 100; horses few; stabling for 15 horses at khan.
				Water supply. A never failing natural stream of beautiful water issues from rocks in the town. Wells in addition. The town is situated at the head of a rich, open, cultivated valley, running as shown in sketch.
				Bunar Hissar visible.
2	..	..	.. ..	Over cultivated plain, low hills close to left, to right 1½ miles. Valley perfectly bare.
3	..	..	.. ..	Brook, steep banks.
3½	57	14¾	Bunar Hissar	Stream (790 feet). Bunar Hissar on low projecting spur, with southern aspect; hill above (850 feet); ruined castle. Track entering it meets macadamized road from Lüle Burgas station. 800 houses, 3,500 inhabitants, Turkish, Greek, and Bulgarian, majority latter. 100,000 kiles wheat, 20,000 barley, 30,000 Indian corn. Administered by Kaimakan. Telegraph station, transmission only in Turkish. Track from Jena to Bunar Hissar, over bare, cultivated, rather sandy valley, is low and heavy in parts, gradients good, surface indifferent, much scored. At Bunar it meets macadamized road projected to run from Lüle Burgas station *viâ* Bunar to Uskub road, 40 feet broad between banks, metalling only in centre, culverts, &c., already falling into disrepair, and only completed half way to Lüle Burgas (6 hours), no bridges on route.
2	59	..	.. ..	Hills to left, rocky (900 feet), and juniper scrub on
2¾				hills, stones at hand for repair of track.
3¼	..	..	.. ..	Track rocky. Teke, a Turkish religious house. Tchiftlik and cupola, col (1,000 feet), thick juniper and oak scrub.
4	..	..	.. ..	Narrow cultivated valley, bad gradient coming to it.
4½	..	..	.. ..	Thirty feet stream; 2 feet deep. Kariali-dere, sand and stones, trees, banks 6 to 4 feet (870 feet), branch track to left, to Somjak, a large village lying on gently sloping open ground at the foot of mountains, visible from a point (1,100 feet) 2 miles along the branch track, which is of narrow width and bad gradient, confined by scrub.
5½	..	..	.. ..	Valley. Dense, high oak scrub.
6½	..	..	.. ..	Scrub lower.
8	..	..	.. ..	Cultivated valley ½ a mile across gorge, left, 600 to 800 yards. 30 feet stream (900 feet), 9 inches deep, swift, stony bottom, no banks. Track stony and bad.
9½	..	..	.. ..	(1,150 feet). Low scrub, Wisa visible.
10½	..	..	.. ..	Brook (950 feet), slab-stone bridge.
10½	..	..		Cultivated valley, scrub ends except on hills.
11¼	..	..	.. ..	Gorge 300 yards to left, rocky sides, mountain stream (810 feet), conduit to village just to right of track. Pazarlik-keui, Bulgarian, 16 houses.
12	..	..	.. ..	Brook (750 feet), ruined fountain.
12¾	..	..	.. ..	Brook, slab-stone bridge, bad order. Stone causeway. 1,000 yards to right on cultivated spurs of scrub covered hills. Turkish village of Tchiftlik-keui, 20 houses.
13½	..	..	.. ..	Brook.
13½	..	..	.. ..	Stream issues from ravine.
14½	..	..	.. ..	Brook, track bad, in low deep ground.
15	72	18 no baggage.	Wisa	This town is situated on three rocky projecting mountain spurs commanded to the north by the mountains rising above a long rich cultivated valley, over which the town (800 feet) and the castle (900

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				feet) are completely, being some 200 feet above the valley level. These spurs are separated by rocky ravine-like valleys, the stream through the central one spanned by a bridge of two 13-feet bays, had narrow wooden roadway, stone piers.
				The track from Hissar, paved and bad in the town, is fair when clear of it, but as it rises into rock ground gradually becomes worse, as far as the Kaklidere, and is through open country, here a branch track leads to Soujak, and several through the dense scrub to Wisa, first close to telegraph, often only 8 or 9 feet wide. Sandy and stony till within 5 miles of Wisa, approaching which down a cultivated valley, it is bad and deep. The best track to Sarai skirts the town. Gradients of tracks up to Wisa bad.
				Houses 800, oxen and buffaloes 700, arabas 100, sheep and goats 1,000, horses 400, wheat 10,000 kiles, barley 1,000 kiles, Indian corn 7,000 kiles, oats 500 kiles.
				Dependent villages 32, stabling at two khans for 30 horses (one stable bad).
				From Wisa, a track leads to Lule Bergas, a track to Kirk-kilissi this route, a track through the mountains to Midia, and a track and projected road (little or nothing executed) via Sarai to railway at Tcherkess-keui, 1-wire telegraph, Turkish transmission only. Town and district administered by Kaimakam.
				Fountain. Brook.
1½	73½	..	.. ..	Brook. Track bad (600 feet).
½	..	..	.. ..	Brook. Mutgyarat, Bulgarian and Greek. Village
2½	..	..	.. ..	1¼ miles to right, 100 houses.
				Spring. Stone paving.
2½	..	..	.. ..	Village 500 yards to left on slope of rocky hill.
½	..	..	.. ..	Satanli, 20 houses, water good.
3½	..	..	.. ..	Rill. Main track to right, through low ground, when swampy left-hand track, which rises, is the best.
4½	..	..	.. ..	(600 feet.) 1,200 yards to left, village of Aliorgis or Ewrenli, Greek and Bulgarian, 200 houses.
				Brook, steep banks, in places trees.
5	..	..	.. ..	(600 feet.) Greek, Turk, and Bulgarian. 20
6½	78½	20.5	Tchukly-Koui	Turkish houses, 100 Greek and Bulgarian. Good water always, 30 or 40 oxen, 40 arabas, 5,000 kiles wheat, 3,000 kiles barley; stabling at khan for 40 horses.
				Skirting Wisa, or descending by winding steep route of steep gradient, the track runs along an open cultivated valley, is low-lying, and in wet weather very deep; at 1 miles it divides, the higher level track passing through Tchukly, the other straight on country to north, and to left mountainous, rocky, limestone hills, much brushwood to right, and to south rich valley, with table land much in cultivation beyond.
				(500 feet.) Brook, good water.
700 yds.	..	..	.. ..	(500 feet.) Brook joins main track. Down, thorn scrub.
1½	..	..	.. ..	
				(620 feet.) Edilkeui, Turkish village, 50 houses, just to right of track.
2½	..	..	.. ..	Col (850 feet). Sarai visible, cultivation to right, open cultivated hills to left.
2½	..	..	.. ..	Down cultivated valley, brook.
				Rill.
3½	..	..	.. ..	Stream, 10 to 20 feet wide, banks 4 feet in places.
3½	..	..	.. ..	Ford, tchiftlik beyond.
4½	..	..	.. ..	Stream, Baltchik Dere, 2 to 3 feet deep, two main channels 24 feet and 30 feet, paved causeway, bad order, two stone bridges; one arch, 18 feet span, other 12 feet, considerable camber, not in good order Beyili Kopru (name of bridge) 500 feet.
4½	..	..	.. ..	

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
6	84½	21.50	Sarai ..	(580 feet.) Track on leaving Tchukly is bad and deep, meets main track, and runs over sandhills, then descends long gentle valley down and cultivated, hills on left receding. Approaching Sarai the track is bad at stream; bridges in bad order.
				Sarai lies on a flat ridge or spur with considerable streams on both sides, the spur projecting into an open gently sloping plain.
				It is a small town of 120 to 150 houses, population principally, if not entirely, Musulman, Turk, and Circassian. Good water. 5,000 kiles wheat, 1,000 kiles barley (average yield), 50 oxen. Wisa just visible. Tracks lead hence to Wisa, Tchorlu station (6 hours), Tzamdja, or Strandja (3 to 4 hours, and by two routes to the rail at Tcherkess-keui (this route).
				In all directions streams are met with difficult to ford in floods. On route to Tchorlu there is said to be a bridge over the worst, and on one route to Tcheress-keui a bridge or ford passable when the fords on the present route are not. The track to Tchataldja is *via* Jeni-keui in bad weather; the present route is said to be preferable.
¼	..	..	.. ..	Administered by Oubashi. River. Galata Dere 30 yards across, 3 to 4 feet deep (February), soft bottom: weir.
1½	..	..	.. ..	Ridge (720 feet), low oak scrub.
3½	..	..	.. ..	Brook, open down.
5	88¼	22.50	Manaka ..	Valley, in which lies Circassian village of Manaka, said to contain 300 dwellings.
				Track bad across valley from Sarai, fair on downs, bad approaching village, open country. From Manaka there are several branch tracks, one to Strandja, one to Jeni-keui, and one to Tcherkess-keui, *en route* to Tchataldja river. Manaka Déré, 60 feet wide, 5 ft. 6 in. on ford (February), soft bottom, swift. A serious obstacle in floods, no better ford in neighbourhood (520 feet.)
				Track turns to right across ford.
¼	..	..	.. ..	Brook.
1	..	..	.. ..	Ascending ridge. Watercourse.
1¼	..	..	.. ..	Thicket to right (750 feet.)
3	..	..	.. ..	Cultivation and trees. Track bad, very deep.
				Wood begins. Valley. Rill.
4½	..	..	.. ..	Rill. Wood ends.
				Rill.
5½	..	..	.. ..	Brook. Wood.
6¾	..	..	.. ..	Brook. Wood ends.
7	..	..	Tcherkess-keui ..	Circassian, 60 houses (650 feet).
				Track bad in Manaka and very deep both sides of ford. Ascending to the table land it is up to 3 miles, overland-part cultivated, and is of bad surface, deep in wet weather. At 2½ miles is a branch track to left, presumably to Jeni-keui; there are indeed many tracks through the scrub, some practicable when others are not; a guide is desirable. From 3 miles it is of fair surface and easy gradient, over downs covered with oak scrub and sparse timber to Tcherkess-keui. It is a wild desolate country.
7½	..	..	.. ..	River Tchorlu Déré, 80 feet across, 5 feet deep (February), soft bottom, impassable at times. Railway crossed, and 1-wire and 6-wire lines of telegraph with it. Track turns to left to Tcherkess-keui station. 130 kilometres from Constantinople, situated just beyond the river in a valley, with high scrub-covered hills above it to the south, sidings, water tower, two or three buildings besides station. No important tracks appear to lead to it except that from Sarai, though it is the nearest station to the large isolated village of Strandja. No villages near except Tcherkess-keui, track from which is bad. Buyukkilji, 1½ hours distant, Jeni-keui, 1 to 2 hours.
8	96¼	25.20 No baggage	.. ..	Down, sparse scrub, following railway. Railway
1	..	..	.. ..	

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
2	..	..	.. ..	bridge to the left, wooden trestles, stone abutments, three 20-feet to 24-feet spans, stream 20 feet to 25 feet across, steep banks, ford 6 feet deep (February).
7½	103¾	27.15	Buyuk Khan	(780). Solitary Greek house in hills in middle of wild country, dense forest of oak scrub covering the downs in every direction. The track from Tcherkess-keui follows the railway down the valley until the latter turns to the left, with very wide curve, here at about 5 miles it is said to meet track from Jeni-keui, and again crosses the stream, forded at 2 miles Jeni-keui here being distant, in clearing of forest, about 2 miles to the left. Ascending to high ground the track at Buyuk-khan is joined by that ascending at once from Tcherkess-keui, and passing over high downs, part open, part covered with forest, reaches this point after considerable detour. This latter track is ill-defined and impracticable for ordinary traffic, but possible when the fords and low ground in the valley on the other tracks are not so.
5½	109¼	28.50	.. .. Sinekli Station.	Meet railway, 117 kilos. (750 feet), 108 kilos. From Buyuk-khan there are merely a number of wood-land tracks, which cross and re-cross the railway, and they are of indifferent surface throughout, and useless for extensive traffic in winter. Railway and tracks here follow a great watershed ridge. After Tcherkess-keui the tracks soon enter a country completely covered by a forest of dense oak scrub. Sheep plentiful. Water not abundant, some pools along watershed (1 to 2 acres in extent). At Sinekli station there are some 4 or 5 buildings in the forest, besides the station. The village of Sinekli, Greek and Bulgarian, 100 houses, is distant 1 or 1½ miles to S.E., and Kurfalli is distant 1 to 1½ hours from the station, in open country. A track, partly following the line of one of the old roads of the country, leads from here to the port of Silivri, distant 4 to 5 hours, described as indifferent, and but little used. Principal ford, 1 hour from Silivri, easy. Much charcoal is made in the neighbourhood.
½	109¾	..	.. ..	Valley left, watercourse, thicket, steep sides. Valley to right.
¾	..	..	.. ..	Village of Sinekli, 1 mile right.
¾	..	..	.. ..	Valley to left and valley to right. Embankment on railway. Platelayer's house. Embankment half-a-mile long in places; 25 feet above ground level.
3	..	..	.. ..	Small cutting. Sinekli station visible.
4	..	..	.. ..	Forest only extends 2 miles to right; beyond, down and scrub.
4½	..	..	.. ..	Two miles to right, Turkish village, 130 to 160 houses.
5	..	..	.. ..	Valley to left, steep sides, thicket.
5½	..	..	.. ..	Watercourse, steep sides, to right.
5¾	..	..	.. ..	(730 feet). 3 houses, Tchai Khan. Leave railway, which runs to right.
6	..	..	.. ..	Two conical hills; the lower, Sivri Kaya, visible in front. Forest ends on track, still extending over country to left. Village to right front, name not Kurukash, as in Kiepert's map. Along ridge, track divides, turn down minor ridge to right.
8½	..	..	.. ..	(350 feet). Cross railway, and stream, 20 feet to 30 feet, steep, 12-feet banks, 3 feet to 3½ feet deep.
10½	..	..	.. ..	Railway bridge, 140 yards to right. (620 feet) up hill. Village of Kubakdja, 2 miles to left, in scrub forest.
11½	..	..	.. ..	Turkish village of 90 houses, on reverse slope of hill, in rich, cultivated land, (550 feet). Rivulet through, several fountains.
13	121¼	31.50	Avra ..	

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				The track from Sinekli follows the watershed. Tracks on both sides of the railway, and numerous branches. At Tchai khan there is a branch to right to a village near. At 6 miles, ridge is clear of scrub, and there is a good view over the country. At 8¼ miles, track divides, and either track may be taken. Right-hand track appears most direct, and to avoid the valley of the Kara-Su Dere. Track up to this point of good gradient, but indifferent surface. Here cultivation begins. The track is heavy and deep where it crosses the railway, and a deep-scored track, with steep gradient, leads thence to Avra.
1½	.	..	.. ..	Track crosses a track leading from Kubakdja station to Silivri. Along this line a road, part complete, is said to be laid out; here it is only a track. Railway station of Kubakdja, distant 1 mile left. Bridge, half a mile before it, of 5 bays, wooden trestles.
1½	..	..	.. ..	Tchiftlik, 600 yards to right. Track trends to left. Ravine begins to right.
3½	..	..	.. ..	Descending to stream of Karasu, 60 to 80 feet broad, swift, stony and sandy bottom, sandy banks, beds 100 feet, precipitous hills to right.
3½	124¾	32.55	Inchigia ..	(150.) Turk, 40 houses. This little village, apparently poor and squalid, is situated in a bend of the left bank of the Karasu Dere, with precipitous hills rising abruptly beyond the river, the railway passes close to it. Track from Avra for 1½ miles is along a ridge of cultivated heavy ground, and is very deep in winter, it thence descends to ford; in very bad throughout.
¼	..	..	.. .	Ford across Karasu 30 to 40 feet across, very muddy bottom, 4 feet deep, approaches steep, and very deep in mud.
1½	..	..	.. ..	Down reached up steep incline, traces of paved road, (400 feet) Tchataldja visible, also Babaunkkash, and the front of the Tcheknujeh—Perkos position. Sobuk-keui 2½ miles left, and Okuli about same distance to left fronts. (Statistics in former report.)
3	..	..	.. ..	Brook (240). Cultivation.
3¼	..	..	.. ..	Hill (260).
3¾	..	..	.. ..	Brook. Ravine (350). Small Turkish village of Izzedin, 20 houses, distant 3 miles to left.
4½	129¾	33.50	.. ..	Tchataldja (350). Beyond the ford at Tutchijis there are traces of old paved road. Bridge on railway; wooden trestles, stone abutments, three bays, 18 to 20 feet span, visible, and a little to north of it the river is crossed by a small two-arched stone bridge, not passable for wheel traffic; stream deep, steep banks. The track to Tchataldja here lies over cultivated land, sloping to the valley to the left; very steep hills covered with low scrub, and intersected by ravines rising abruptly to the right. There are two tracks, the upper best in wet weather, soil being sandy; in parts both are bad and deep. Tchataldja, that lies almost hidden in a fold at the foot of the steeper hills, is administered by a Pacha. (Statistics furnished in former report.) A one-wire telegraph leads from here to Constantinople. The route to that city crosses the first branch of the Karasu by a five-arch stone bridge; 1 mile from Tchataldja, the other branch, by a stone four-arch bridge; 3¼ miles from it the marsh between the two traversed by a 9-feet wide roughly paved causeway. A macadamized road descends the hill to the station, it is perfectly straight and of steep gradient; bridge across river not constructed; road falling into very bad order. River crossed by rough wooden footbridge. A track probably from the suburbs of the soil indifferent leads hence to Silivri, 4 hours distant.

No baggage throughout times, no index.

Distance.			Name of Place.	Remarks.
Intermediate miles.	Total miles.	Total hours.		
				No force advancing by the Adrianople—Kirk-kilissi route would, it is thought, use that route described after Sirali or Teherkess-keui, as from Teherkess-keui the tracks in winter are nearly useless, and could not well be used simultaneously with the railway at any time.

Inclosure 9 in No. 31.

No. IX.—REPORT ON TRACK AND ROAD FROM ENOS TO ADRIANOPLE *via* FERRIES ACROSS MARIZZA, KALDERKOS, BIDIGLI, SOFLI, DEMOTIKA, OURLI, &c.

Parts of route only seen from railway—not traversed. Report compiled from observation on January 19th, on February 5th and 6th, and information procured.

Distance.			Name of Place.	Remarks.
Intermediate kilom.	Total kilom.	Total hours.		
			Enos ..	*Enos to Adrianople via Sofli Demotika, &c.* Cross river at Enos caique ferry. Track across low-lying, perfectly flat ground, of reputed hard sandy surface, leaving salt lake on left, to next ferry (said to be 2 or 3 hours distant, with some fords between), thence *via* Kalderkos to Bidigli.
44 (about)	44 (about)	..	Bidigli Railway Station	Here a road, laid out only, is met at the railway station, where there is no village.
3	47	..	.. ..	Village left probably Bidigli.
3½	47½	..	.. ..	Stream, 1 foot deep, sandy. Railway bridge, 15 yards, near.
3¾	47¾	..	.. ..	Stream, 3 feet deep, sluggish. Railway bridge, 12 yards, near.
	52	..	.. ..	Turkish village, on or near road.
11	55	..	.. ..	Turkish village on or near road.
12	56	..	.. ..	Marizza close, 150 to 200 yards broad, sandy, with 5-foot banks; stream under 2 miles per hour.
12½	56½	..	.. ..	Crosses big mountain-stream 3 feet deep in channel. Bridge of nine bays being constructed, stone piers only built, banks varying from 10 feet to 6 feet.
13¾	57¾	..	.. ..	Crosses stream 3 feet deep, 6-foot banks without bridge. Railway bridge 80 feet.
16	60	..	.. ..	Village on or near road.
19¼	63¼	..	Sofli ..	Greek town of Sofli; road near railway. Town and station described in Route .
				At Bidigli a road was met that runs along this side of the Marizza valley. Towards Dedo Aghatch this is merely a track of sandy surface, leaving the rail almost at once, where it crosses the big marshy valley and runs by a different route to Feredjik. From Bidigli towards Adrianople the road is merely laid out, but is of excellent gradient and (from the sandy nature of the soil) of good surface, except in swamps. It is, for the most part, to the west of the rail, and nearly parallel to it. Road along bases of hills almost throughout, but at 14 kilom. from Bidigli.

Sand Hill
Sand Hill
Sand Hill

Salt Lighthouse
Tchasker Dere
Shafee Hahmed Pasha Kent
Olyucha Kent
Down
Soltejmen Dere
Country and River shown in another sketch
ADRIANOPLE
Yast extent of bare Country mostly Grass with almost an imperceptible slope to the S.
KIRK-KILISSE

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TCHATALDJA

TIME AND EYE SKETCH OF ADRIANOPLE TO TCHATALDJA

Jouikeui
Tcherkess Koui Station
Tcherkess Serai
Tcherkess Dere
Manaka
Saraï
Edilkeni
Tchakliukeni
Mangyarat
Castle
WISA
Scale 2 miles-1 inch
Mountains
Rocky
Soudjak Dere
Kariat's Dere
Soudjak
BUNAR
HISSAR
A
B

Distance.			Name of Place.	Remarks.
Intermediate kilom.	Total kilom.	Total hours.		
				beyond the stream, it ascends through a pass. Favourable point for blocking road and rail.
				A few kilometres before reaching Sofli there is a branch road to the left to Teham-kesi. This is completed as far as that village, and is 6 kilom. 300 metres in length, and there are eight bridges and culverts on it.
2¼	..	..	..	..	Mountain stream 3 feet deep in channel, 4-foot to 5-foot banks. Bridge, wooden roadway, stone piers, three 27-foot bays, 12 feet to 14 feet above the stream.
5½	..	..	..	..	Stream 1 foot deep. No bridge. Railway bridge near, 20 yards long.
9¼	..	..	..	..	Mountain stream. Bridge, wooden roadway, stone piers, nine bays of 24 feet span, 4-foot thick piers. Roadway 10 feet above stream—sluggish and 5 feet deep in channel.
13⅝	..	..	..	..	About here it leaves railway and passes near or through large Christian village.
15¼	..	..	..	..	Near railway, passes through or near small Turkish village along base of steep scrubby hills.
20½	..	..	..	..	Christian village on or near river close to railway, re-entering angle. Favourable point for bridging from west side. Road at some distance from river.
22⅞	..	..	..	..	Road now diverges from river and makes straight for Dèmotika.
28¾	92	..	..	..	The town is on a river, which must be crossed to enter it. There is said to be a wooden bridge. Here the road does not enter the town, a branch 600 metres long connecting it. Town 2½ kilom. from station. The town of Demotika, on the Tchai Déré, or Demotika river, is apparently a town of over 3,000 inhabitants. Small craft ascend as far as the junction of this river with the Marizza. A track passing the Marizza by ferry communicates with Usunköpri. There is a macadamized road to the railway station, and a road follows the course of the river up to Eulidur as far as Karuljali. This road is 17,951 metres long, 17,204 metres of earthwork and metalling being complete. There are to be 36 bridges and culverts on this route: 27 only are complete. From Karuljali to Eulidur the road is 5,930 metres long; only 1,000 metres of earthwork and metalling completed.
				After Sofli the road is metalled where necessary, and follows generally the bases of the hills, it is excellently laid out and of good gradient, the hills scarped where necessary. As with all Turkish roads, no steps are taken to repair it; between Bidigli and Demotika it crosses the railway once or twice, but is for the most part to the west, it is commanded almost throughout, and the same remarks as to vulnerable points, &c., apply to it as to the rail route.
12·9	104·9	..	Ourli Station	From Demotika a road is said to be laid out to Ourli Station, only 4 kilometres of this being complete, it is reputed to pass through a very desolate country. At Ourli there are only a few tchiftliks, from Ourli to the Adrianople Railway Station at Kara-aghatch, a road, 33·6 kilometres in length has been laid out, 8·6 kilometres and 7 bridges and culverts only are complete. This road is also through very sparsely populated country (it is said). In fair weather, however, the easy gradients of these projected roads and their definition of the best direction might render them of great service from Kara-aghatch; a macadamized road of 4½ kilom. with two biggish bridges, and 10 culverts leads to the town.
33·6	138·5	..	Kara-aghatch Railway Station	
4½	143 (90 miles about)	..	Adrianople..	Road much damaged by recent floods.

Inclosure 10 in No. 31.

No. X.—REPORT ON RIVER MARIZZA FROM ADRIANOPLE TO THE SEA.

Compiled from observation at Enos, on Rail to Dedé Aghatch, and near and at Adrianople.

Channels.

The Marizza cannot be considered a navigable river except for small craft of the nature of barges, and of very light draught. These ascend within a mile or two of Demotika, up to which place there is 5 feet 6 inches to 5 feet (it is said) in the channels, but in summer unless rain comes navigation is suspended even for these. The stream is rapid, the channels intricate and narrow, and there is no regular system of towing. Only rafts or boats drawing a few inches of water can navigate to Adrianople.

In its lower part there are two branches, and there are bars at the mouth of both. The western branch is the wider and shoaler and not used for navigation. The Eastern branch has 5 to 7 feet of water in the channel over the bar. Southerly winds close it completely, but the stream re-opens it in a few hours.

The sea for a long way off the mouth is said to be shoal and bad holding ground. At Enos the water is up to 4 fathoms deep in the channel, and the stream runs between 3 and 4 knots in floods, and there is deep water as far up as Tchaiagsi, somewhere about the junction of the two branches and near Kalderkos. Near the

Mills.

latter place mills are said to exist that considerably interfere with the water supply (nothing seen of them from rail); if this is the case the weirs must be presumably partial, only damming the channels in dry seasons.

Surrounding country.

As far up as Ipsala the river flows through a wide plain, once the Gulf of Enos, and now filled by its deposit. Not only much of this land, but also a vast amount on this river up to Adrianople and on the Ergine River up to Usunköpru might be rendered of immense value by some improvement and confining of the channels. At present much of the land is in marsh and much of the rest only cultivated for quickly growing crops in summer. The position of the river as regards the rail is fairly shown in Kiepert's map (where all the railways and adjoining topographical features appear more accurately plotted than the rest of the map), and is noted in Route .

The land between the rivers Ergine and Marizza is high, and mostly cultivated; the points where the rail is thence commanded and the important neck near Usunköpru are noted in route just mentioned.

Ferries.

One opposite Enos, only caique at present, possibly at times cord and raft.

Another on route thence to Adrianople about two to three hours (it is believed) distant from it. Bridge Ferry on route between Feredjik and Ipsala, passage for horses, arabas &c. Ditto at Kalderkos possibly the same).

At Sofli, 66½ kilometres on railway from Dede Aghatch, same description of ferry, Turkish villages on far side.

Point for bridging.

At 92 kilometres on railway there is a re-entering angle and shoals in part of the stream, favourable point for bridging from west shore, 2,000 yards flat to base of hills on east shore.

Ferry Fords.

Ferry for horses, &c., on route from Demotica to Usunköpru.

Doubtless, from difficulties of navigation, &c., it is fordable in many places, probably from Ipsala upwards if not below (no information). Near Kuleli Burgas and between it and the Usunköpru Station is the Constantinople—Adrianople railway bridge (on separate sheet attached). From here nearly as far as Adrianople there is a double channel, the east the main channel. At Adrianople is the only stone bridge on the lower part of the river (separate sheet). Here is the confluence of the rivers Arda, Maritza, and Tunja. All the three rivers are reputed shallow and fordable in summer, these and the Ergine all partaking of the nature of mountain streams, and being liable to great variation in height. Ford on Marizza, four miles above Adrianople. Tunja and Arda bridges are described on separate sheets attached. From Adrianople the rail follows the west bank of the river to Philippopolis, &c. There is a bridge across it at Tirnova, on the branch line to Jamboli (better information believed to have been furnished than this report could give). The river is apparently sandy throughout its lower course; banks usually sand, and 4 ft. to 5 ft. above stream at ordinary times. In dry seasons it is probably no great

Railway bridge.

Bridge.

Tributaries.

Ford.

Bridges on the tributaries. Railway bridge.

obstacle throughout. Its width at Adrianople is about 300 yards, and in its lower course it seems of very varying width. It does not narrow appreciably as far as seen above confluence of Arda and Tunja (five miles). Islands, as shown in the sketch of Adrianople, are numerous at that place, and are probably so below. One or two can be seen from rail.

Width.

Railway Bridge over River Marizza, near Kowleli Burgas.

One and a half kilometres from Kouleli Burgas, towards Constantinople, rail crosses broad bed of the Marizza by three bridges.

The first is a wooden trestle bridge, of solid construction, 20 ft. bays, and 100 metres in length, roadway some 20 ft. to 24 ft. above stream; then follows an embankment of about 300 metres, and then a lattice girder bridge, 400 metres long, in 16 bays, each girder being 25 metres. The roadway is on top of the girders, which are about 20 ft. above the stream, and the girders are supported by braced iron trestles. Then follows an embankment some 500 to 600 metres long, and then the third bridge, a wooden bridge, 100 metres long in nine bays.

It is proposed to replace the wooden bridges by iron when they require renewal.

Probably open roadways to all three bridges.

Bridges for single line.

Railway Bridge over the Arda River, near Adrianople.

Two and a half kilometres from the Adrianople station at Kara-aghatch the Arda River is crossed by the railway. The bridge is wooden, and consists of 29 bays; it is 330 yards long, 15 to 20 feet above the stream. The bays vary in width from 24 up to 30 and 40 feet. It is a solidly built trestle-pile bridge, the timbers are round, but do not appear over sound in places. The main channel is on the station side, and crosses diagonally towards the far side of the bridge, the greater part of the bed dry except in floods. Stream in ordinary times not over 5 feet deep (5 ft. in February), the bridge is for a single line only, with open railway. Stream 1 to 1½ miles per hour, river liable to very sudden floods, rise very great, bridge of doubtful stability to resist such a torrent, additionally strengthened in places.

Inclosure 11 in No. 31.

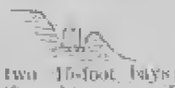
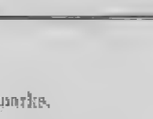
No. XI.—REPORT ON RAILWAY BETWEEN DEDE AGHATCH AND ADRIANOPLE.

Examined from Train on February 5th and 6th.

Distance. Intermediate kilom.	Distance. Total kilom.	Distance. Total hours.	Name of Place.	Remarks.
			Dede Aghatch.	*Railway from Dede Aghatch to Adrianople.* Station 1 kilom. from port. At post a 6-bay bridge in course of construction. Biggest bay 12 feet. Bridge 20 yards across. 12 feet above mountain stream.
				8-foot bridge.
1¼	1¼	..	.. ..	Close to station 3-bay bridge; 10-foot spans; stone piers; 10 feet to 12 feet above stream. 5—22-feet 3—18-feet and 3—21-feet bays. Wooden pile trestels. Bridge too low and narrow. New bridge with more water way in course of construction; 100 metres across, with 4 lattice girders of 25 metre span. Piers in stone complete. 14 feet high from bottom of torrent bed. Girders not arrived.
				6-foot bridge (wood, west).
1½	1¾	..	..	5-bay pile bridge, 6 feet above sandy, shallow.
5¼	5¼	..	..	stream. See 14 kilom. to right. Wood begins 1½ kilom. through, trees 1 foot to 2 feet 6 inches diameter, not straight; trunks procurable up to 30 feet.
6½	6½	..	.. ..	West bridge. 6—12-foot bays, 6 feet above slow stream, stone abutments to outside bays.
				15-foot west bridge, stone piers. Two bays. Stream
7½	7½	..	.. ..	12 feet below, 4 or 5 feet deep.
				8-foot west bridge.
8¼	8¼	..	.. ..	Large Turkish village 1½ kilom. to left.
8½	8½	..	.. ..	One village to right, another to left of this at no great distance, 50 yards. Pile bridge, 12 or 14 bays,
9¼	9¼	..	.. ..	8 feet to 10 feet. 4 feet above stream.
..	10	..	.. ..	Two small 20-foot bridges.
9½	9½	..	.. ..	Bridge, 9 bays, 20 feet to 24 feet. Stone piers;
10½	10½	..	.. ..	10 feet to 12 feet above stream; 3 feet deep in channel.
				Low ground, marshy.
12	12	..	.. ..	Bridge, 5 bays, 8 feet to 10 feet. Pile trestles
12½	12½	..	.. ..	10 feet above dry bed of stream.
				Leave marsh.
14	14	..	.. ..	Enter marsh.
19	19	..	.. ..	Bridge, wooden trestle; 2—20-foot bays, 14 feet
19½	19½	..	.. ..	or 15 feet above dry bed of stream.
22½	22½	..	.. ..	Small cutting through steep 20 yards sides.
23½	23½	..	.. ..	Bridge, wooden trestle, 3—12 foot spans, 7 feet above dry bed of stream.
				Bridge, 8 feet.
27	27	..	.. ..	Bridge, wooden trestles, 3—20-foot bays; 12 feet
27½	27½	..	.. ..	above stream, with steep banks.
28	28	..	Feredjik Station.	The town of Feredjik is distant to the west 1 kilom. 150 metres, situated on slope of a gentle hill with southern aspect. It is commanded to the north. Population, Turkish and Christian, 1,800 to 3,000. A barrack, but no soldiers. One-wire telegraph. Macadamized road to station. Plain towards Maritza cultivated, many fruit trees. Water-tank at station.
				The line, a single one, on leaving Do to Aghatch runs through hilly land, on an embankment, from 4 feet

Distance. Intermediate miles.	Distance. Total kilom.	Distance. Total hours.	Name of Place.	Remarks.
				to 6 feet above it, gradually approaching mountains: at first, some distance to the left, and touching their spurs at about 14 kilom. A fair amount of timber is passed, in oak woods; but little is seen of the river Maritza as far as Feredjik, where the plain to the west of that river, hitherto mostly in grass and marsh, is much cultivated.
1½	29½	..	.. ..	Bridge, 5 feet.
2	30	..	.. ..	Bridge, 2—10-foot to 12-foot bays. Stone piers 12 feet above stream, 2 feet deep.
2½	30¼	..	.. ..	Bridge, wooden trestle, 3—15-foot to 18-foot bays, 12 feet to 15 feet above a stream with steep banks, 3 feet or 4 feet deep in channel.
3¼	31¼	..	.. .	Bridge, wooden trestle piles, 26 bays, 8 feet to 10 feet; 7 feet above sandy stream, main channel far side of bridge, occupying 2 to 3 bays.
3½	31½	..	.. ..	Bridge, 6 feet.
8	36	..	.. ..	Bridge, 15 feet; 2 bays 4 feet above stream, 2 feet or 3 feet deep.
8¾	36¾	..	.. ..	Bridge, 6 feet.
9	37	..	.. ..	Small cutting, gentle sides, easily turned.
9¼	37¼	..	.. ..	Bridge, 20 feet.
10½	38¼	..	.. ..	Two lines of telegraph, 4-wire and 1-wire.
10¾	38⅞	..	.. ..	Cross (to Salonica), cutting through rock, 50 yards, not over 15 feet deep.
11	39	..	.. ..	Village, ¾ kilom. to left. Gradient becomes easy, after a steep ascent for 2 or 3 kilom.
12⅞	40½	..	.. ..	Hills gentle, and scrub, close on right, ½ kilom. on the left. Steep descent from 32½ to 41¼.
13⅞	41½	..	.. ..	Steep gradient ends.
14½	42½	..	.. ..	Cutting 80 or 100 yards, gentle sides, easily turned, embankment across marsh, ½ kilom; bridge, 10 feet.
15½	43½	..	.. ..	Cutting, 60 to 80 yards.
1	..	..	.. ..	Steeper sides.
15½	43½	..	. ..	Bridge, 5 feet.
16	44	..	. ..	Bridge, 5 feet, village ½ to ¾ kilom. to the left.
16½	44½	..	.. ..	Bridge (wooden), six bays varying from 8 feet to 15 feet across, 10 feet above stream, 2 or 3 feet deep; marsh. Well worth destroying.
18¼	46¼	..	.. ..	Marsh. Stone-faced embankment, 400 metres long 4 feet above it.
20	48	..	.. ..	Small cutting, steep side, 30 yards through.
21½	49½	..	.. ..	Village to left.
22	50	..	Bulgli station	No village at station.
				Railway from Feredjik follows the bases of the hills till from 37 to 42 kilom. it passes through low grass, this would be an important point to occupy; gradient of ascent and descent steep, said to be 2½ or over. It subsequently crosses two marshes, whose it is the only road in wet seasons.
1¾	51¼	..	.. ..	Oak wood. 51½ to 56 kilom. begins, large timber, crooked trunks.
1¾	51½	..	.. ..	Cutting 160 yards through.
2½	52½	..	.. ..	Bridge, 5 feet.
2¾	52⅞	..	.. ..	Turkish village ¼ kilom to the left, probably 15 right. Water [illegible]
3¼	53¼	..	..	Bridge, wooden trestle, three 15-foot bays, 10 feet above sandy stream, 4 feet deep.
3¾	53¾	..	. ..	Bridge. Stone piers, two bays 15 to 18 feet, 10 feet above sluggish stream, 3 feet deep. No bridges visible on road here.
4¼	54¼	..	.. ..	Cutting (gravel) 150 yards through, considerable detour to turn.

Distance.			Name of Places.	Remarks.
Intermediate kilom.	Total kilom.	Total Hours.		
8	58	..	.. ..	Turkish village 150 metres to the left.
10¼	60¼	..	.. ..	Bridge, 12 feet.
11	61	..	.. ..	Turkish village ½ kilom. to the left.
12	62	..	.. ..	Mariza main channel or branch, 350 metres to right 140 to 180 metres broad, 5-foot banks, stream under 3 kilom. per hour.
12½	62½	..	.. ..	Bridge over a river. Seven bays, 20 to 24 feet, stone piers, stream 0 ft. to 3 feet deep, banks steep, and from 6 to 10 feet. Bridge on road to west, distant about 300 to 400 metres; nine bays, stone piers (in course of construction).
13¼	63¼	..	.. ..	Small cutting. Railway and road here leaving Mariza valley pass between two hills; a small force might hold both against advance from Dédé Aghatch for some time; front more or less protected by river at 62½.
13¾	63¾	..	.. ..	Bridge. Wooden trestle. Four 20-foot bays, 10 feet above stream, 3 feet deep, steep 6-foot banks.
16	66	..	.. ..	Village to the left.
17	67	..	.. ..	Low hills commence between Rivers Ergine and Mariza, 8-foot bridge.
18½	68½	..	Sofli station	8-foot bridge. Turkish village, 2 kilom. to the right, across river. Water tank. The village or small town of Sofli is Greek, and of 1,200 to 2,000 inhabitants. It is situated in a rich country on the southern slope of a cultivated hill. Ferry opposite it across the Mariza, capable of transporting horses, arabas, &c.
19¼	69¼	..		The railway from Bidigli follows generally as before the base of the hills, its approach to the river at 62 kilom., and the important point at 62½ kilom., are already noted; a road laid out but unmetalled (see Route), follows its general direction throughout.
				Bridge, 8 feet.
				Bridge, 5 feet.
				Bridge, 6 feet.
				Bridge, 7 feet.
				Bridge, 6 feet.
3¼	72½	..	.. ..	Bridge, wooden trestles, three 27-foot bays, 12 feet above stream. Bridge on road, three 27-foot bays, 12 to 14 feet above, a stream 3 feet deep in channel, and of 4 to 5 feet banks.
5¼	74¼	..	.. ..	Bridge (wooden trestle, three 20-foot bays 8 feet above, stream 1 foot deep in channel.
6½	75½	..	.. ..	Island in Mariza, main channel to the east—
6¾	76	..	.. ..	Cutting Hills steepish; if a large mine could be blown here into the river, road and rail would be blocked.
7½	76¾	..	.. ..	Bridge, 5 feet.
8½	78	..	.. ..	Bridge, 3 feet.
9½	78½	..	.. ..	Bridge, 6 feet. Wooden trestle, 10 feet above a sluggish stream or river 5 feet deep, 9 bays of 20 to 30 feet span. Mariza in centre of flat cultivated plain.
10¾	80	..	.. ..	Bridge on road, 9 bays, 24 feet span, stone piers, 4 feet thick.
				Bridge, 6 feet.
				Bridge, 6 feet.
				Bridge, 5 feet.
				Bridge, 6 feet.

Distance.			Name of Place.	Remarks.
Intermediate kilom.	Total kilom.	Total hours.		
11½	80½	..	.. ..	Bridge, 6 feet.
11¾	81	..	.. ..	Bridge, 6 feet.
12	81¼	..	.. ..	Small 30 feet cutting  Bridge, stone piers, two 16-foot bays; 8 feet above sandy stream, 6 feet deep, stone-faced embankment leading to bridge.
12¾	82	..	.. ..	Bridge, 5 feet.
13¼	82½	..	.. ..	Bridge, 5 feet.
13¾	83	..	.. ..	Bridge, 16 feet, 2 spans. Large Christian village to left; 300 houses.
14¼	83½	..	.. ..	Bridge, 12 feet.
14¾	84	..	.. ..	Bridge, 6 feet.
15¼	84½	..	.. ..	Small Turkish village, 400 metres left. Road and rail under steep scrubby hills on left; hills on right, 2 kilom. distant across river.
				Bridge, 12 feet across, 2 bays.
				Bridge, 5 feet.
				Bridge, 8 feet.
18	87½	..	.. ..	Bridge, 6 feet.
18½	88	..	.. ..	Bridge, small, two bays, 7 feet above sandy stream, 4-foot banks. Large Arnaut village, 2 kilom. to right, across river.
19¼	88⅝	..	.. ..	Bridge, 12 feet.
22¾	91½	..	.. ..	River close to right, 100 to 120 metres, broad swift stream.
23¼	91¾	..	.. ..	Bridge, 12 feet.
23½	92	..	.. ..	Re-entering angle in river, shoals, ground level on far side of river for 1½ to 2 kilom. to base of hills, favourable spot for bridge.
23¾	93	..	.. ..	Hills beyond river, 1½ kilom. distant.
25¾	95	..	.. ..	Large village, 2½ to 3 kilom. across river.
26¼	95½	..	.. ..	Bridge, wooden, 90 feet span, 14 feet above stream; stone-faced embankment leading to it.
27¼	96½	..	.. ..	Demotika bridge; wooden trestles, 16 bays, 20 to 24 feet span, 10 feet above, stream running 1½ kilom. per hour, and 2 to 5 feet deep.
28¾	98	..	Demotika Station.	Water tank. Town not visible from station, visible from bridge on hill, distant 2 kilom. From Sofli, road and rail follow bases of hills, and are commanded by the hills on the west throughout, and at the points noted by the hills on the east of the river.
3	98½	..	.. ..	Small cutting.
29 to 30	..	..	.. ..	Two small cuttings. 
31¼	101½	..	.. ..	Cutting, 100 to 150 metres long.
32	101	..	.. ..	Christian village, left, 60 houses.
32¼	103½	..	.. ..	Bridge, 12 feet.
32¾	106½	..	.. ..	Bridge, wooden, small. Small Turkish village to left. Hills to right, 1 kilom. distant.
33¼	107½	..	.. ..	Village to left, ½ kilom.
33	107	..	.. ..	River, 1 kilom. to right.
40¼	108½	..	.. ..	River, 200 metres to right, banks low and sandy (5 feet).
41	109	..	.. ..	No banks, wider, more sluggish. Hills to left slightly scarped.
42	110	..	.. ..	Railway bridge to right over River Mariza, on second line.
44	112	..	Kuleli Burgas.	Station. Quarries of good white limestone just beyond station, close to railway. Railway to Dedeagatch commences to right.

Distance. Intermediate kilom.	Total kilom.	Total hours.	Name of Place.	Remarks
				Meets Adrianople—Constantinople line 1½ kilom. before Kuleli Burgas. The important bridge over the Marizza at this place is described on sheet attached to report on Marizza. The bed of the river is here very broad, sandy, and stony, and there are three channels. Small village, Turkish and Greek, near the station. Line here double. Water tank. Village of Kuleli Burgas to left. Bridge, small. Hard white calcareous stone being quarried. Bridge, 27 feet. Village to left.
1½	113½	..	.. ..	
3	115	..	.. ..	
3½	115½		.. ..	
4½	116½	..	.. ..	
5½	117½	..	.. ..	
8½	120½	.	.. ..	Bridge, small. Village, left. Bridge, 10 feet.
9	121	..	.. ..	
9½	121½	..	.. ..	No village, only two or three tchiftliks near. Railway along base of gentle hills, commanded throughout. Flat plain, cultivated to right, between it and the river.
11	123	.	Gun Station	
				Bridge, 24 feet.
½	123½	..	.. ..	Bridge, 15 feet, two spans.
2½	125½	.	.. ..	Bridge, 15 metres in three spans. Last important stream.
	125½	..	.. ..	
9½	132½	..	.. ..	Bridge, 15 feet, one span. Bridge, 24 feet, one span.
10	133	..	.. ..	Bridge, 24 feet, one span.
12	135	.	.. ..	Hills on left recede.
14	137	..	.. ..	Railway as before, along base of gentle hills, mostly cultivated, till it enters the flat cultivated plain between the Arda and Marizza rivers. At Kara-aghatch there is a large station, engine shed, spare engines, &c. Line from Kuleli Burgas double, from here to Philippopolis single.
	145 (about)	..	Kara-aghatch Station, or Adrianople.	

In this reconnaissance no account has been taken of rolling-stock, engines, &c., as it is believed all information on these points has been already received. All cuttings are noted, and all bridges 5 feet and upwards, as the formation of a gap or some practicable distinction however small might be a matter of importance when time or other considerations might prevent the selection of the most vulnerable points. The position of villages in the neighbourhood of the rail has also been considered in formation of possible use. The rail from Dede Aghatch to Adrianople is a single line to Kuleli Burgas and double thence to Adrianople. The permanent way is fairly laid, and is in very fair order (as far as could be seen) throughout. The route follows generally the base of the hills on the right bank of the Marizza, the curves are numerous, but the route not so circuitous as that taken by the Adrianople—Constantinople line, the gradients [illegible], except that mentioned at about 10 kilom. from Dede Aghatch.

The bridges are excessively numerous, some of considerable breadth; all have timber road, bearers, and stone abutments; the piers are described as stone or wooden trestles, according as they exist. Both on this line, and the system of Ottoman railways generally, those in wood as they wear out are to be replaced by stone and iron; thus at Dede Aghatch there will be a lattice girder bridge of 100 metres in [illegible] metre spans (rail on top), and a similar bridge at Demotika. Most of the stonework is in a hard white limestone found at Kuleli Burgas, where there are considerable quarries. Some of the rougher work as embankments are faced with sandstone; this, as well as limestone, is found near Dede Aghatch.

As a railroad, the line is excessively easy to destroy,

Distance. Intermediate kilom.	Total kilom.	Total hours.	Name of Place.	Remarks.
				owing to the number of bridges. None of the cuttings are worth destroying unless they were the only points available, excepting the point at 76 kilom., where the road and rail touch the river; if a demolition of road and rail should prove feasible here on careful examination, without an undue amount of labour, it would be most effectual. Regarded as a road, the portions between the bridges are excellent, the sleepers being bedded. The bridges have open roadways, and would all require the addition of cross planking. The demolition of the bridges would possibly not seriously oppose an advance; there is no span beyond that of a rail, and all these could scarcely be removed, though of course if the piers were destroyed the spans would be considerable. Timber is at hand for repairs at many points along the line, and at the time of year an advance along this route would probably take place, many gaps would simply require to be filled in. The line is apparently liable to be flooded in a good many places. The command of both road and rail from the hills between the Ergine and Marizza already mentioned is important.

Inclosure 12 in No. 31.

No. XII.—INFORMATION CONCERNING THE EXISTING AND PROJECTED ROADS IN THE VILAYET OF ADRIANOPLE.

The figures and information here given cannot be in any way guaranteed, except as borne out by statements in the routes or itineraries to which reference can be made. The information in column of remarks is from personal observation or reliable sources.

Additional information of a similar nature could doubtless be obtained by reference to some of the officers, Royal Engineers, recently employed in Turkey.

HERBERT CHERMSIDE, *Lieutenant R.E.*

10th March, 1877.

Statement of Roads projected and existing in the Vilayet of Adrianople. The roads are laid out without regard to property, &c., are usually very straight, where the ground allows of it, and of excellent design, being of good width, easy gradients, &c. (For remarks on state of, and want of repair, *see* conclusion.

No.	Designation of Road	Total length of Road in Metres.	Earthwork and Metalling. Completed.	Earthwork and Metalling. Uncompleted.	Remarks.
1	From Adrianople to the Servian frontier, *viâ* Philippopolis, Tatar-Bazardjik, Sofia. Nearly the whole of road in this Vilayet;* ..	218,309	216,399	1,710.	* Constructed before rail; once a very good road; now falling into disrepair; of good gradient for 8 miles from Adrianople; two telegraph lines along it. 19,150 metres of this road—viz., between Mustafa Pasha, the railway station, and the old road form part of the distance, so its total length towards the Servian frontier is 237,560 metres.
2	From Adrianople to Rodosto, *viâ* Hadra and Baba-Eski†:— The portion between Adrianople and Baba-Eski .. .. 59,267 / " " " Alpolu and Rodosto 60,570	59,267 / 16,750	Nil. / 43,820	† 40 ft. wide, leaving Adrianople; metalling, 20 ft. wide. For description, *see* route. Two lines of telegraph along it.
3	" Slimnia to Achiolo and Bourgas on the Black Sea, *viâ* Karnabat and Aidos‡	108,000	97,400	10,600§	‡ Probably two branches from Aidos, one to Achiolo, other to Bourgas; from Bourgas to Aidos (according to British Consul) in bad repair; from Aidos to Karnabat good, and thence to Slimnia good. Surface forming natural road. Biggest bridge two hours beyond Karnabat, towards Slimnia, good order.
4	" Slimnia to Philippopolis, *viâ* Yeni-Sarra, Eski-Sarra, Tchirpan, Sinil-meschli, and Pipreli	115,060	115,060	Nil.	
5	" Philippopolis to Kizanlik, *viâ* Kalofer	93,100	90,100	3,000	
6	" Philippopolis to Staninaka	17,340	17,340	Nil.	§ 25,500 metres; originally badly constructed.
7	" Tatar-Bazardjik to Samakow (the portion of road in this Vilayet)	34,000	34,000	"	‖ Probably some portion of this road completed between villages, or distance along Constantinople road to where it would branch.
8	" Eski-Sarra to Selmen (the portion near Sinil-meschli)	20,000	20,000	"	¶ From 11 to 21 works said to be in progress or completed recently.
9	" Adrianople to Gallipoli	15,040	15,040	"	** Traced work distributed over 40,800 m.; the old track said to be practicable for advance of army from Bourgas, near Hamsabejhi; leaves Tunja Valley, ascent for three hours, not steep. Adrianople visible from commencement of descent; good natural surface.
10	" Gumuldjina (a portion of road)¶	1,500	1,500	"	
11	" Adrianople to Schumla, *viâ* Jamboli**:— " " Jamboli .. .. / " Jamboli to the frontier (in this Vilayet)	105,800 / 61,600	17,517 / 20,000	88,283 / 41,600††	†† Traced works opened along 25,420 m. This is one of the military or strategic roads, as distinct from others.

Statement of Roads—*continued.*

Number.	Designation of Road.	Total Length of Road in Metres.	Earthwork and Metalling. Completed.	Earthwork and Metalling. Uncompleted.	Remarks.
12	From Adrianople to Gallipoli, the portion between Usunköpri and Gallipoli	120,000	7,988	112,012	Work commenced along 14,570 m.
13	" Yeni-Sarra to Tirnova, *viâ* Slina or Elena	50,000	26,500	23,500	Traced and work opened along 21,000 m., a good deal of blasting to be done.
14	" Adrianople to Kisschanja, to be connected with Karabunar Station	16,810	4,854	11,956	Kio-shanja or Keusse-hamza. Traced, work opened along 16,810 m.
15	" Adrianople to Wadil (a portion) Teschli-muslim	22,621	14,800	7,821	" " " 22,621 m.
16	" Interior of Adrianople to Military School	853	853	Nil.	
17	" Interior of Demotika, joining to the road leading to the Railway Station, Kuradjali, Soully and Bidgli	628	628	"	
18	Prolongation of the road between Kuradjali and Enlidar	5,930	1,000	4,930	
19	From Demotika to Railway Station at Ourli	12,000	4,000	8,000	On Route
20	" Mustafa Pacha to Kezanlu	35,144	2,500	32,644	Traced, work opened along 18,203 m.
21	" Usundjowa to Khas-keui or (Hafs-keui) in connection with the Philippopolis and Adrianople road	6,358	6,358	Nil.	

Statement of Roads—*continued.*

Number.	Designation of Road.	Total Length of Road in Metres.	Completed.		Uncompleted.		Remarks.
			Earthworks and Metalling.	Bridges and Culverts.	Earthworks and Metalling.	Bridges and Culverts.	
22	From Mustafa Pacha to the Railway Station	4,821	4,821	12	Nil.	Nil.	
23	" " " old road	14,685	14,685	23	"	"	
24	" Railway Station, Harmanly, to the old road	160	160	Nil.	"	"	
25	" Harmanly to the old road	500	500	3	"	"	
26	" Tirnowa to the Railway Station	2,500	2,500	4	"	"	
27	" Railway Station, Tirnowa-Sevmenli, to the Eski-Saara Road	29,000	23,990	..	5,010	32	
28	" Kajadjik Station to Khaz or Hass-Keui	22,680	22,680	18	..	..	
29	" Tchirpan to Hissarli	12,000	8,000	9	4,000	7	
30	" Hadji-ollis Station to Berbend	4,500	4,500	7	Nil.	Nil.	
31	" Papasli Station to the old road	403	403	Nil.	"	"	
32	" " " Tchirpan Road	13,650	12,690	18	960	"	
33	" Katunizza Station to Stanimaka	10,550	9,900	6	650	"	
34	" Philippopolis to the Railway Station	1,135	1,135	3	Nil.	"	
35	" Railway Station to Dermendere	2,885	Nil.	Nil.	9,885	16	
36	" Hissar (baths) to Philippopolis	25,330	20,000	..	5,330	..	
37	" Karlowa to Philippopolis	9,340	9,160	5	180	Nil.	
38	" Tatar-bazardjik to the Railway Station	1,600	1,600	5	Nil.	"	
39	" " Railway Station to Pestubalak	39,000	38,300	10	700	56	* That is from Tatarbazardjik to Ollu or Olluk-keui.
40	" " " Ollu-keui*	41,000	31,000	Nil.	10,000	53	
41	" Sarimbei (Sariehaubey) to the Railway Station	6,000	4,500	2	1,500	18	
		21,630	19,705	Nil.	1,925	30	
42	" Karahissar to Küyunlu	22,500	17,500	"	5,000	35	
43	" Station to Eski-Saara Road	27,108	27,108	"	Nil.	25	
44	" Station, Radna-mahali, to the road	1,112	1,112	2	"	Nil.	
45	" Yeni-Saara to the Railway Station						

Statement of Roads—*continued.*

Number.	Designation of Road.	Total Length of Road in Metres.	Completed.		Uncompleted.		Remarks.
			Earthwork and Metalling.	Bridges and Culverts.	Earthwork and Metalling.	Bridges and Culverts.	
46	From Harmanly Station to Slimnia Road	13,440	13,440	9	Nil.	Nil.	
47	" Yamboly to Slimnia	27,080	27,080	6	"	"	Reputed good order.
48	From Demotica to the Railway Station	2,150	2,150	3	Nil.	Nil.	Seen from rail apparently good; see route.
49	" " Karadjaly	17,951	17,204	27	747	9	
50	" " Sötly and Bidigly	48,750	47,750	54	1,000	4	See route.
51	" Tchaun-keui to the road between Sötly and Bidigly	6,300	6,300	8	Nil.	Nil.	
52	" Feredjik to the Railway Station	1,140	1,140	2	"	"	See route.
53	From Wi-a to Sarili and the Railway Station at Teberkess-keui ..	39,588	4,290	Nil.	35,298	30	See route.
54	" Tchorlu to the Railway Station	2,632	2,432	4	200	Nil.	
55	" Rodosto to Muratly Railway Station	23,460	22,460	10	1,000	25	
56	" Lüle Bourgas to the Railway Station	5,835	5,835	7	Nil.	Nil.	
57	" " " Uskub *viâ* Bunar Hissar	46,349	17,523	29	28,826	?	See mention route.
58	" Baba-Eski to the Railway Station	10,600	10,600	29	Nil.	Nil.	
59	" " Kirk-killissi	35,229	30,716	38	4,513	14	See route.
60	From Hafsa to Pavlo or Pawly-keui	25,386	10,718	10	14,668	28	Falling into disrepair, crosses bridge 1,660 yds.; gradients good.
61	" Usunköpru to the Railway Station	2,520	2,520	9	Nil.	Nil.	
62	" Mulgara to the Railway Station, *viâ* Haire-bol	62,430	17,341	..	45,089	25	
63	" Adrianople to Ourli	33,583	8,622	7	24,961	?	On route.
64	" " the Railway Station at Kumgbatch	4,500	4,500	12	Nil.	Nil.	In bad order, owing to recent floods; see Report.
65	" Lydja to Orta-keui	39,000	27,020	20	11,980	17	

As it is most exceptional for any steps to be taken to maintain roads in repair after construction, almost all those completed are urgently in need of repairs; some are almost useless in rainy weather, except for the slow araba traffic of the country.

LES CHAUSSÉES DU VILAYET.

	Kilometres.	Centimetres.
D'Adrianople jusqu'à Baba-Eski, en traversant Hafsa et Koulali ..	59	—
De Baba-Eski à Rodosto, en traversant Aipoulou et Ofchanli (villages)	37	—
D'Adrianople à Mustaffa-Pacha	30	—
De Mustaffa-Pacha en traversant Hebipzin, jusqu'à Harmanli ..	22	40
De Harmanli à Kadi Keui	31	90
De Kadi Keui à Déirmenli-Mahlessi	30	72
Déirmenli à Philippopoli	42	67
De Philippopoli à Tatar-Bazardjik	32	20
De Tatar-Bazardjik à Poussila (village)	15	75
De Poussila à Palanga	17	68
De Palanga aux frontières du Vilayet de Danube	8	50
De Slimia à Karnabat en traversant Kasapli, et Alladgi (villages) ..	56	—
De Karnabat à Aidos	26	—
De Aidos à Ahilo Burgas	40	—
De Slimia à Eski-Zaara en traversant Yeni-Zaara	71	80
D'Eski-Zaara à Ouzoundzova	20	—
D'Eski-Zaara à Zirpan	48	—
De Philippopoli à Stanimaka	17	30
" Bana	60	—
De Bana à Kizanlik	33	—
De Tatar-Bazardjik aux frontières du Danube, sur la route de Samakov	33	50
Total	729	32

Information as to roads in Vilayet of Adrianople, possibly of use. H. C.

No. 32.

London,
22*nd March* 1877.

Sir,

Should a Russian army, having traversed Moldavia and Wallachia, seek to cross the Danube and push on to Constantinople, it offers its right flank to Austria. A very small demonstration on the part of Austria, the mere massing of an army of observation behind the Carpathian mountains, must always paralyze, more or less, Russian action south of the Danube, and must always retain a Russian force of many thousands of men in Wallachia and Moldavia, to preserve and protect the communications of the army operating south of the Danube.

Russian writers, notably General Fadeeff, have even gone the length of saying "Austria can arrest Russia without firing a gun, merely by her armed neutrality. The knot of the Eastern question lies in Austria, not in Turkey. Russia cannot enter Turkey except through Austria."

Under such circumstances I considered it desirable that, so far as was possible, the features of the country through and the roads by which Austrian armies could advance on the Russian flank, should be examined and reported on.

There are five places from which Austria may threaten the right flank of a Russian army, viz.:—

Lemberg, Kronstadt, Hermanstadt, Petrozseny, and Oravitza or Orsova; each of these places is connected by railway with all parts of the Austrian Empire.

A.

1st. From Lemberg there are three lines of advance—viz., *via* Tarnopol and the Valley of the Bug. There is a direct line of railway by this valley leading on Nicholeff.

2nd. By Marianapol and the Valley of the Dneister; here an Austrian river.

3rd. From Cernowitz, down either the valley of the Pruth or Sereth; here Austrian rivers.

The two first may be disregarded. They are circuitous, and the advantages to be gained hardly commensurate with the distance to be traversed, unless, indeed, Austria were to make common cause with Polish nationalists.

Cernowitz is undoubtedly a place of first-rate importance, from it the

Austrians command a fair road running down the valley of the Pruth, and the good road and railway leading down the valley of the Sereth on Galatz.

The massing of an Austrian army at this point would be a serious menace to Russia. There being no position (the country being very open) where a small retaining force could check an Austrian advance and protect the Russian communications, while Austria herself would be secured from any counter-stroke attempted by the Russians from Wallachia, owing to her position being covered by the Carpathian mountains. I regret that I was unable to have this country thoroughly examined.

B.

The next line of Austrian advance is from Kronstadt on Ploëschti. Kronstadt is connected by railway with all parts of the Empire.

The road leading through the pass is good, and a railway is now in process of construction, which will make this point of first-rate importance.

Captain Grover, R.E., and Lieutenant Cockburn, R.E., examined and reported on this line, and I have the honour to forward herewith:—

Report on the Giurgevo—Bucharest Line.
Report on the Bucharest—Ploëschti Line.
Report on the road to Kronstadt over the Tömös Pass.
Report on the Railway from Kronstadt to Segesvar.

C.

The next line of Austrian advance is from Hermanstadt on Slatina, down the valley of the Othu River. I was unable to get this road examined, but I am informed it is a good road, and that much traffic passes over it.

D.

The line of Austrian advance from Petrozseny, down the valley of the Ijii River on Cragova, I was also unable to have examined, but I am informed the road is indifferent and little used.

E.

The road from the end of the Wallachian Railway at Verciorova, by Orsova or Oravitza. A railway is being constructed to connect the end of the Wallachian Railway with the Austrian network. This, in addition to the facilities afforded by the Danube, will make this line of advance of great importance, and one that would probably be used in conjunction with that from Kronstadt.

I attach a report on the Bucharest—Verciorova Railway and on the Pass of the Iron Gates, by Lieutenant Hare, R.E.

I have the honour to be,
Sir,
Your most obedient Servant,
R. HOME,
Lieutenant-Colonel, R.E.

The Inspector-General of Fortifications.

Inclosure 1 in No. 32.

MEMORANDUM ON THE GIURGEVO—BUCHAREST RAILWAY.

(Passed over on the 21st February 1877, by Captain G. E. Grover, R.E., and Lieutenant G. A. Cockburn, R.E.)

The railroad consists of a single line, narrow gauge, 4 feet 8½ inches: the rails being spiked, without chairs, to the sleepers laid transversely.

The line was constructed by Mr. John Trevor Barkley, now of the Reform Club, London.

A telegraph line runs along both sides of the railroad, having two wires on the east side and three on the west side.

In the following itinerary the names of stations are given according to the local spelling, and Kiepert's nomenclature is also given.

The altitudes of the stations are numbered, with reference to a datum—the level of the River Danube at Giurgevo—which appears to agree with that of Kiepert's maps.

Distance in Kilometres.		Local Name of Station.	Height above River Danube at Giurgevo.	Remarks.
Intermediate.	Total.			
		Giurgiu. (Kiepert Dschurdschewo.)	Feet. 20	Stone-built station, with long wood roofed platforms, 2 feet high. Loop line to Smarda (5,000 metres). Depôt of sleepers. The line passes through a flat alluvial plain, containing rich arable lands. On both sides of the line are large drains. On the right are several patches of vines and fruit trees. On the left a few small brick-kilns. On approaching Fratesti, long lines of low undulating hills are seen on the left, approaching the line in a N.E. direction, as shown on Kiepert's Map.
12·75	12·75	*Fratesti.* (K. Fratestchti.)	20	Stone station-house on right, with platform about 50 yards long and 2 feet high. Two sidings with storehouses. Goods platform, 15 yards long, of gravel, with stone retaining wall, 3 feet high. After leaving Fratesti the line approaches the hills above-mentioned, and crosses them by a series of cuttings, varying in depth from 5 to 25 feet, and low embankments over the intervening watercourses. Small detached woods, from ½ to 1½ miles distant, seen on the right. Sandpits on the left. About 2,000 metres from Fratesti, the line crosses the main road (unpaved) from Giurgevo to Bucharest, near the village of Daja, which consists of about 200 mud huts. After crossing this road, the line enters upon a flat plateau, averaging 270 feet in altitude above the Danube at Giurgevo. Low swampy ground, intersected by dykes, is seen to the right.
13·45	26·2	*Báneasa.* (K. Banlasa.)	300	Station resembles that of Fratesti. The line passes through plantations of oak, small and unfit for military purposes. It falls 100 feet in about 8,000 metres from Báneasa, running through spurs (no cutting exceeding 20 feet in depth) and over low embankments in the valleys, as in its rise from Fratesti. About 8,000 metres from Báneasa the line passes two hamlets, Mov Flokes on the right, and Dadilov on the left: and then runs down to Comana through a valley about 500 yards wide, and with sides 200 feet high, following the course of a stream.
17·3	43·5	Comana .. (K. Komana.)	120	Situated on a tributary of the river Argis (K. Ardschis). The passenger station contains a double platform, about 50 yards long and 2 feet high, formed by a short loop-line. The station-house is of stone, with a verandah half covering the platforms. The goods station has two sidings and a platform, as in the other stations. A water tank is supported on a brick tower about 25 feet square, with a pumping engine. On leaving this station the line crosses the tributary river, which is about 40 yards wide, on a wrought-iron bridge, with double-flanged lattice girders; depth of web about 6 feet. The country is here flat and swampy, intersected by dykes.
4·1	47·6	Ilalta Gradiste. (K. Gradistchtea).	120	Station resembles that of Fratesti, except that it has only one, instead of two sidings. The line, passing scrub coppices on the right, and flat arable land on the left, crosses the river Argis (K. Ardschis) by a wrought-iron lattice girder bridge about 120 yards long, depth of web about 10 feet. It then passes

Distance in Kilometres.		Local Name of Station.	Height above River Danube at Giurgevo.	Remarks.
Intermediate.	Total.			
			Feet.	through continuous small woods, principally of dwarf oak, and crossing the river Sabara by an iron bridge about 15 yards long, 1 mile N.W. of the village Dobresi, it rises gradually to Vidra.
6·8	54·4	Vidra .. (K. Kanvida.)	160	Station resembles that of Halta Gradiste. The line passes through an open, flat, arable plain, crossing numerous country cart tracks, all unpaved.
5	59·4	Halta Sintesti (K. Krezeschti.)	190	Apparently the same as the other stations. The train did not stop here on the occasion of our visit.
4·4	63·8	Jilava .. (K. Skilawa.)	220	Station resembles that of Halta Gradiste. The line passes through flat arable land, crosses the main Giurgevo—Bucharest road, and then running between detached houses with gardens and fruit-tree plantations, enters the suburbs of Bucharest.
8·2	72	Bucuresci (K. Bukureschti.)	240	Stone-built station-house, with brick storehouses, and many sidings.

G. E. GROVER, *Captain, R.E.*
G. A. COCKBURN, *Lieut., R.E.*

Lieut.-Colonel R. Home, C.B., R.E.

Inclosure 2 in No. 32.

MEMORANDUM ON THE BUCHAREST—PLOESCHTI SECTION OF THE "BUCURESCI—BARBOSI—ROMAN" RAILWAY. (Travelled over on the 23rd February 1877, by Captain G. E. Grover, R.E., and Lieutenant G. A. Cockburn, R.E.

The railroad consists of a single line, narrow gauge, 4 feet 8½ inches, spiked to sleepers without chairs. The sleepers are laid transversely, and placed at irregular intervals averaging 3 feet apart from centre to centre. They are rough and some are hooped with iron-bands.

On the east side is a line of telegraph (7 wires), and on the west side one (of 4 wires) as far as the Chitila Junction, thence 4 and 2 respectively.

The altitudes given in the following itinerary refer to the level of the Danube at Giurgevo as the datum (0)—and agree generally with those marked on Kiepert's maps.

Distance in Kilometres.		Name of Station.	Height.	Remarks.
Intermediate.	Total.			
		Bucuresci .. (K. Bukurschti)	Feet. 240	The terminal station of the Verciorova—Craiova—Bucuresci line, and of the Roman Barbosi—Bucuresci railway. Large stone-built station-house with covered platforms, storehouses, and many sidings. Water supplied from wells. The line passes through a flat, arable country, unenclosed, and with rich alluvial soil. On the right, trees appear in patches at from 1 to 2 miles distance.

Distance in Kilometres.		Name of Station.	Height.	Remarks.
Intermediate.	Total.			
			Feet.	and become continuous on approaching the next station, near which is a manufactory (with steam power), at about ¼ mile from the line. There are side drains to the line.
10	10	*Chitila* ..	300	A double-storied stone station-house. On right side passenger platform, 2 feet high, 120 feet long; on left side, a covered platform, 3 feet high, 100 feet long, with three lines of sidings, a large brick storehouse, and empty spaces for storage. Piles of rails and sleepers. On right, at ¼ mile distance from the line, a village (? Chitila) seen. About 1 mile beyond Chitila station, the Verciorova line branches to the left, with a telegraph line of five wires (three detached from right side, two detached from left), after which the telegraphs, as far as Ploeschti, consist of four wires on the right side and two on the left. The railroad then crosses a good metalled road leading between Bucharest and Pitesti; after which, 1 mile further on, two streamlets—the Koleutino and a tributary.
				On the right side, copses of small oak and hazel approach the line, separated occasionally by clearings, in one of which is a small village, Buciumeni, on the right. These plantations appear to be regularly cut for firewood. They would afford cover to an advancing force, though the trees are of no great size.
	18	*Berita* ..	340	On right, double-storied stone station-house, with two detached buildings. Platform, 1 foot high, 120 feet long; on left side, three sets of rails for sidings, and platform, 120 feet long, 6 feet high; of gravel with stone retaining-wall. Three small storehouses. The line passes through young plantations, mostly of scrub oak, occasionally cleared, showing tracts of rich, arable land, on which stand many detached farms. Near the next station (Perisu) the country slightly undulates.
13	31	*Perisu* ..	380	Small station. On the left side is one line for siding, and a small brick store house with a wooden store shed. The village of Perisu appears to lie about 1 mile distant to the left, and the villages of Baesti and Kocioku to the right, on the banks of a small stream which is crossed by the line. The railway passes through plantations of young oaks and ash, crossing occasionally swampy tracts covered by willows and under water at the date of our visit. It crosses the river Jalomitza (which is about 90 feet wide) by a bridge about 15 feet above water, and consisting of two spans of curved wrought-iron lattice girders. The river is apparently subject to inundations, as surmised from the length of bridge, over low ground, at the north side of the river. About ¼ mile to the right, a village (Pisku) appears on the left bank of the river Jalomitza.
9	40	*Grivitsa* ..	400	On the right side are three sidings, an open goods station, and a platform 100 feet long and 3 feet high. On the left side passenger station and store-house. This is apparently a great depôt for firewood. The line passes through rich, arable land, swampy in parts, and copses, chiefly of hazel. It crosses the River Prahova, now 30 feet wide, by a wrought-iron bridge of double span, and about 200 feet long, extending over low ground on the river's banks, apparently as a precaution against floods. Passing through a cutting from 5 feet to 15 feet deep, and about 500 feet long, whose section shows great depth of mould and richness of soil, the line, crossing a small stream, emerges into an open, arable plain, over which detached houses gradually extend from the suburbs of Ploeschti.

Distance at Kilometres.		Name of Station.	Height.	Remarks.
Intermediate.	Total.			
20	60	*Ploesci* .. (Klepert, Ploeschti.)	Feet. 320	A large road junction station at the foot of gentle slopes, rising to the Carpathian mountains. It comprises large storehouses, eight lines of siding, two pumps for supply of water to engines, an open goods platform, 120 feet long, 50 feet wide, and 4 feet high, and a covered goods shed, 60 feet by 30 feet, with small platforms on either side. At the south end of the station is a gravel pit, affording an ample supply of gravel, from near the surface, for ballasting the permanent way.

G. E. GROVER, *Capt. R.E.*
G. A. COCKBURN, *Lieut. R.E.*

Lieut.-Colonel R. Home, C.B., R.E.

Inclosure 3 in No. 32.

MEMORANDUM ON THE ROAD FROM PLOESCHTI (IN WALLACHIA) TO KRONSTADT, OR BRASSO, (IN TRANSYLVANIA,) OVER THE TÖMÖS PASS IN THE CARPATHIAN MOUNTAINS. (Travelled over on the 24th–25th February 1877, by Captain G. E. Grover, R.E., and Lieutenant G. A. Cockburn, R.E.)

The road is everywhere in excellent condition. In Wallachia, it is 40 feet wide, elsewhere it averages 30 feet in width, being occasionally contracted at the bridges. It is much used by wheel traffic, crossing the mountains, and it is carefully kept in good repair.

The following itinerary estimates distances from Ploëschti in time, according to the observations made when travelling over the road in a heavily laden four-horse carriage, drawn through much mud and melting snow, and meeting a slight snow storm in the mountains, after passing Sinaia. The pace, however, may be regarded as fairly good, for a heavy vehicle.

The altitudes are referred to the level of the River Danube at Giurgevo as the datum (0), and this seems to agree exactly with the assumed datum in Kiepert's maps.

The geological formation of the Carpathian mountains is assigned to the Jurassic system, and the rocks—consisting mostly of limestones and conglomerates (with schists and granites in the heart of the mountains)—form plateaux isolated from each other by deep valleys running irregularly in every direction and sloping towards the plains.

Distance from Ploëschti in miles.	Distance from Ploëschti in time.	Name of Place.	Height above River Danube at Giurgevo.	Remarks.
	Hours.	Ploëschti.	Feet. 320	Estimated number of inhabitants, 15,000. Houses built of brick, wood, and plaster. Approximate number of churches, 10. Wide streets, 40 feet in most parts. Three large open spaces, suitable for parking guns or military vehicles. Water supply abundant, from counterpoise wells in the streets. On leaving this town, the road to the Tömös

Distance from Ploëschti in miles.	Distance from Ploëschti in time.	Name of Place.	Height above River Danube at Giurgevo.	Remarks.
	Hours.		Feet.	Pass is 40 feet wide, metalled, and in good repair. On the left side of the road lie heaps of stones (for maintaining the road), about 100 yards apart; each heap containing about 10 cubic yards. These are dug up from the gravel bed which lies close to the surface, and extend along the road from Ploëschti to the bridge over the River Prahova.
				There are side pathways, each 6 feet wide, separated from the road by open side-drains, 2 feet deep.
				A telegraph, with three wires, runs along the left side of the road the whole way from Ploëschti to Sinaia. After Sinaia, it carries only two wires to Kronstadt.
	0.20	.. ..	..	The road, on emerging from the town, leaves a small gas factory on the left, and enters a fertile, arable plain, open and unenclosed, bounded on the left by a wood, apparently of large trees, 2 miles distant (as estimated), and about 1 mile long.
	0.45	Cantonu No. 6.	640	Brick, one-storied cottage, painted white, about 30 feet square, with shingled roof, projecting eaves, and verandah. Counterpoise well. Every "Cantonu" is built on the same pattern.
	1.0	Cantonu No. 7.	670	A wood of young oaks seen on the right; distance, about 500 yards; length, about 500 yards.
	1.20	Farm ..	..	Farm on the right, with 30 stacks of hay, estimated to contain 60 tons. Gently undulating ground on the right leads up to heights (estimated altitude, 1,000 feet), on which is situated the village of Gogeratz, at the distance of about 2½ miles. On the left is a long wood of undergrowth.
	1.40	Cantonu No. 8.	760	On the left, a farm with large outbuildings, distant from the road about 600 yards.
	2.10	Cantonu No. 9.	820	About 2 miles distant, on the right, is a village (? Izuiu), with a church, behind which hills rise abruptly to an estimated height of 800 feet. The village of Diabu and detached houses are scattered over the top and sides of these hills, from which there extends, in a westerly direction, a low spur, on whose slopes are situated the villages of Baicoiu, (Kiepert—Baikoju), Kotof, and Lilicsti, consisting of scattered houses. The hill sides are covered with fruit trees and enclosures.
				On the left the ground rises very gently, and the road now narrows to a 30-feet width.
	3.0	Cantonu No. 10.	900	On the left, about 600 yards distant, a small village (Florosti) is situated in a hollow beneath the hills on the River Prahova.
				Many detached houses, with much stable accommodation and forage, are scattered along this portion of the road.
	3.15	.. ..	..	On the right the Baikoju ridge approaches the road, about 50 feet high. Through a cutting in it a country road winds to the village.
	3.20	Cantonu No. 11.	1,000	To the left is seen a large farm, with tinned roof, about 400 yards distant. Behind it appears the western extremity of the hills which bound the right side of the Prahova Valley. These hills gradually approach the road, increasing in height.
	3.40	.. ..	..	On the left, a village (? Kokorasti Kapri) is seen, about 1,200 yards distant from the road.
	3.45	Cantonu No. 12.	1,080	On the right, a large farm with stone wall enclosure, adjoining which are six counterpoise wells at foot of low steep downs about 100 feet high. On the left is a well and storehouses.
				The hills on the left side now approach to within half a mile, and appear to be covered by scrub and to have steep slopes.
	4.0	.. ..	..	A farm with two wells, windlass, and counterpoise, and hay-stacks estimated to contain 100 tons. The road now winds to the right.

Distance from Ploëschti in miles.	Distance from Ploëschti in time.	Name of Place.	Height above River Danube at Giurgevo.	Remarks.
	Hours.		Feet.	On the right the rising ground recedes from the road to a distance of about 200 yards, gradually forming into hills.
				The roadsides are here planted with young trees.
	4.15	Cantonu No. 13.	1,140	Width of valley about 1,300 yards—viz., 200 yards on right of road and 1,100 yards on left.
	4.35	Cantonu No. 14.	1,240	On the right, peak of hills, estimated at 900 feet above road, and 1,200 yards distant. On the left, the hills, estimated at 600 feet high and 1,100 yards distant.
				The road now passes through a thick plantation of young fruit-trees, and an opening to the left discloses a gorge 200 feet deep, in which lies a small hamlet (Bobolia) 300 yards distant.
	4.45	Baneschti	1,240	The road now passes by a small homestead and detached houses (Baneschti) surrounded by enclosures and fruit-trees. It then descends gently the left side of the Prahova Valley to Slobozia, a village consisting of about 150 small houses. Two wells seen—probably more.
20	4.55	Slobozia ..	1,180	The road, in widening down the slope, is 30 feet wide. It has a stone retaining wall and stout post-and-rail barrier on the left side. The incline is sufficiently gentle for any heavy wheeled traffic.
	5.0	Bridge over the River Dostuna.	1,160	The bridge over the River Dostuna, just above its junction with the River Prahova, crosses the wide dry bed of a mountain torrent, about 230 yards wide, and full of rough stones and gravel. It has nine arches of 20 feet span; its height above the water is 20 feet; width, about 24 feet; and height of parapet walls 3 feet 6 inches. Its length is about 240 feet without, and 630 feet with, its two embanked approaches.
	5.10	Stone fountain.	1,200	After crossing this bridge the road ascends the opposite bank, passing a stone fountain on the right with a good supply of water, and having its left side protected by stone segmental arched side walls. The gradient is gentle, and the road, on reaching the head of the valley, passes on to an elevated plateau.
	5.15	.. ..	1,260	
23	5.30	Cantonu, No. 16 and Kympina.	1,340	The village of Kympina is estimated to contain 800 houses, mostly wood-built, including about 30 huts of somewhat inferior description.
				It has a telegraph station, and contains large stores of wood and forage.
				The plateau on which Kympina stands is of triangular shape, being included within the deep converging gorges of the two rivers Prahova and Dostuna.
	5·40	Cantonu, No. 17.	1,400	The road proceeds up gently undulating ground to Cantonu, No. 17, whence it falls with a gradual incline down the side of a valley containing a tributary stream to the river Prahova, and it crosses this stream by a bridge 24 feet wide, 20 feet above the water, having a timber roadway, stone abutments, and one stone pier. Length of bridge 60 feet. Total length, including approaches, 360 feet.
		Bridge ..	1,280	Here it would appear that a defensive position, of about 1½ miles front, might be selected to deny possession of the Slobozia bridge, and the passages of the rivers Prahova and Dostuna to an enemy who might have forced the Tomis pass, since the great command of the ground would here permit of a good field of view to the front, the flanks are protected by the gorges of the two rivers Prahova and Dostuna, and the front by the streamlet above mentioned (whose gorge is about 120 feet deep), whilst the proximity of Kympina would afford facilities for provisioning a small force. The disadvantage

Distance from Ploiesthi in miles.	Distance from Ploiesthi in time.	Name of Place.	Height above River Danube at Giurgevo.	Remarks.
	Hours.		Feet.	which might at first appear of fighting with one bridge (Slobozia) in rear, as a line of retreat, is modified by the consideration that the wide mountain torrent bed which it traverses was passable by infantry even in the month of February (when visited), and it would be comparatively easy to form ramps and supplementary bridges, if required, from materials on the spot.
	5·50	Cantonu, No. 18.	1,280	The road passes through a valley, about 1,000 yards wide, in the main gorge of the river Prahova, and then crosses the Prahova by a bridge, consisting of a wooden roadway resting on 10 piers and two stone abutments; the span being 20 feet, so that the roadway is about 240 feet long. It is 25 feet above the river. The road now gradually ascends the right bank of the Prahova.
		Bridge over the river Prahova.	1,280	
				At this point, the new railway is first noticed, on an embankment 15 feet high, and it is seen in detached sections, from this point, following the course of the river Prahova. At present only the easy embankments, in low levels, are in course of execution. No masonry, and hardly any tunneling, has yet been commenced. The works have apparently been stopped, in consequence of the severe weather, in the winter season.
	6, 5	Cantonu, No. 19.	1,320	The road rises gently. A village (? Korni) is seen on a high slope to the right—its detached houses dotting the ridges, apparently 2 miles distant. On the left are high rugged peaks.
	6, 20	Cantonu, No. 20.	1,500	The road zigzags down a subsidiary gorge, 100 feet deep, and, crossing a side ravine 80 feet deep by a stone bridge 40 feet long, it enters Bressa, a long straggling village, comprising about 200 houses, with granaries, storehouses, and open sheds. It contains a plentiful supply of water and forage.
	6.30	Bressa		
	6·45	Cantonu, No. 21.	1580	The road passes through an enclosed fertile country.
	6·55	Cantonu, No. 22.	1680	Hills on the left are less precipitous; they are open and bare. On the right, they are rugged and wooded. The road, descending a valley dotted about by small farms, zigzags down into the bed of a stream tributary to the river Prahova, and crosses it by a bridge 30 feet long, 24 feet wide, 30 feet above the water, and with one arch, semi-circular.
		Bridge ..	1380	The valley is full of pollarded willows, and irregularly-shaped sand hills.
				The road runs along subsidiary gorge, studded with cottages, over an embankment 120 yards long, revetted by a masonry retaining wall with open stone parapets.
	7·30	House numbered No. 24; (? Cantonu)	1720	The road crosses a side stream by a stone bridge of one arch. It is 90 feet long, 24 feet wide, and has iron handrails. Then, after 200 yards on the level, the road crosses the main river Prahova by a stone bridge of 5 arches, 150 feet long and 24 feet wide. Thence, after passing a water-mill, it runs along the left bank of the river till just before entering Sinaia.
		Bridge ..	1700	
				The valley is here about 300 yards wide. The road runs on an embankment with a 5-foot masonry retaining wall on the left side. The hills to the right and to the left average 800 feet in height above the road.
	7·35	.. ..	1710	The village of Kimoriuku is visible, on high ground, to the right, and Poienegrahi to the left.
	8·0	Bridge ..	1880	The road crosses a small deep ravine by a bridge with 2 piers, and 2 abutments, of stone, but a wood superstructure, altogether 20 feet long and 24 feet wide. The valley now narrows in breadth to about 150 yards, the hills increasing in height, chiefly on

Distance from Ploiesthi in miles.	Distance from Ploiesthi in time.	Name of Place.	Height above River Danube at Giurgevo.	Remarks.
	Hours.		Feet.	the left, where the estimated altitude is 1,000 feet. On the right of the road are a few detached houses.
	8·10	Embankment	1900	The road passes over an embankment, 800 yards long, with a masonry retaining wall; it then rises up a slope, crossing a small bridge over a deep ravine, and soon after a bridge over a side ravine with very steep sides; the bridge having 2 stone arches and a stone parapet; its total length being 150 feet, and its width 24 feet.
	8·15	Bridge ..	2020	
	8·20	Bridge ..	2100	The valley is now only 160 yards wide, with precipitous sides on the left. It ascends, through Schistose rocks, to a fountain on the right.
	8·30	Fountain ..	2160	The fountain, with a good supply of water, is situated on a level plot, whereon stand about 20 detached houses, forming the hamlet of Florin. Here are seen some preparations for tunnelling for the new railway.
				The road crosses three side torrents by two small timber bridges, and one of larger size, 100 feet long, 20 feet wide, and 80 feet high, with rough timber abutments.
	8·55	Bridge ..	2440	The valley now closes in, forming a defile, with high steep hills, covered by fir trees of size sufficient for the construction of bridges.
				After crossing two more small stone bridges, spanning narrow but deep side ravines, the road crosses the main river Prahova on a stone bridge of three arches, beyond which is a hamlet of detached wooden houses—Isvoru. It then crosses by a bridge, a mountain torrent from the left flowing 130 feet beneath it, and after crossing three similar, but smaller ravines by bridges, the road reaches the watering place of Sinaia, consisting of about 40 large straggling houses—mostly of wood—three large stone-built hotels, and a spacious Greek church on a commanding knoll. The adjacent hills are covered by dense pine woods. The water supply is plentiful. There is here a telegraph station, and the terminal of one of the three wires from Ploiesthi.
	9·25	Stone bridge across the river Prahova.	2120	
43	10·0	Sinaia ..	2610	On leaving Sinaia the road is 30 feet wide, in excellent repair, and leaves a precipitous gorge on the right. The line of telegraph poles, with two wires, follows the road along its right edge. The river Prahova flows on the right, about 400 feet below the road. Pine and larch trees, fit for military purposes, cover the hill sides.
	10 15	.. ..	..	The valley opens out to a breadth of 200 yards in the bed of a torrent, which is crossed by a rough timber bridge. The road is here protected on the right, from the flow of winter torrents by hurdle groynes filled with shingle, and projecting almost at right angles from the road.
	10.20	.. ..	..	The road crossing these streamlets by small stone bridges, and a wider opening by a stone bridge of one span, 60 feet long and 24 feet wide, with parapet walls 3 feet 6 inches high, passes through a small hamlet (? *Beatesi*, Klepert) of about 20 wooden houses, afterwards passing by a "Cantonu, No. ." close to a stone bridge, 60 feet long and 24 feet wide, and then winding round a projecting point of rock, through which a tunnel is being driven for the new railway, enters a gorge narrowing to 40 yards in width, having steep sides covered by pines, and affording a convenient defile for closing the pass.
	10.30	.. ..	..	
	10.40	.. ..	..	
	10.50	Cantonu No. .	2,720	
	11.0	.. ..	2,810	The road then passes through a cutting in the cliff, only 20 feet wide, and crosses the Prahova (here a small river flowing through a wide open stony bed in a series of small streams) by a stone bridge 90 feet long, 24 feet wide, 20 feet above
	11.5	Bridge ..	2,920	

PUBLIC RECORD OFFICE

Distance from Ploëschti in miles.	Distance from Ploëschti in time.	Name of Place.	Height above River Danube at Giurgevo.	Remarks.
	Hours.		Feet.	water, with two arches and parapet walls 3 feet 6 inches high. Turning to the right it crosses the Pariuzugu, a tributary emerging from a gorge, by a stone bridge of similar dimensions to that above mentioned, and spanning a mountain torrent ravine similar to those previously mentioned, having a deep stony bed and steep firm sides, coated by undergrowth. The sides of the pass are here about 1,200 feet above the road. The prevailing rock of the Carpathians, in this region, is limestone of the Jurassic period, with conglomerates, and occasionally schists and granites in the heart of the mountains. The road now skirts the left bank of the River Prahova (the valley narrowing to 100 yards in breadth), after which it crosses a streamlet by a small bridge, and the valley then opens out to include a hamlet of about 40 houses, Grenzmauth Predeslu, with a church. After passing this hamlet the road reaches the culminating point of the pass, where are situated the Roumanian passport office and custom house, with a Roumanian guard. There is a telegraph station in connection with the Roumanian customs' office. The hills are here lower (about 400 feet high on the left, and 600 feet high on the right), and slope more gently towards the pass, which is now about half a mile wide. On leaving this station the road—passing on the right a small Austrian guard-house with a sentry—zigzags down the head of a valley, shut in by two very high peaks. The slopes are thickly covered by pine trees. The road is in excellent condition, averages 30 feet in width, descends by easy gradients, and has its outer edge protected by a stout barrier, formed of 12-inch trees. The telegraph leaves the road and takes a more direct route, rejoining it at the village of Ober Tomös. After crossing the head of a stream by a small stone one-arched bridge, the road is rejoined by the line of telegraph, and, winding to the right, enters the village of Ober Tomös, consisting of about 40 houses (stone, brick, and wood), with three wells in the streets. The Austrian passport office is on the right. From this village the road skirts the left bank of a stream, the Tomöser Wildbach, flowing to the north. This stream is shallow and narrow, of variable current and dimensions, but quite unimportant as a military obstacle, unless swollen by freshets. It has a stony bed. The valley narrows from 300 yards to 150 yards in width, being enclosed by precipitous pine-clad hills. Good beds of building stone (nummulitic limestone) here crop out from the face of the hill on the left. The valley's sides become very precipitous between two high peaks termed the Kristian Mavi (5,500 feet high, Kieport) on the left, and the Malunsatja on the right. The valley narrows to a breadth of but 60 yards, enclosed by hanging rocky cliffs, covered irregularly by pines. The road on level of stream passes through a cleft in rock but 30 yards wide, and then enters a wider breadth of valley, in which is situated the village of Also Tömös. Also Tömös contains two new three-storied brick hotels, each about 120 ft. by 60 ft., and from 20 to 30 detached villas and houses, substantially built of brick, and constituting apparently a well-to-do
	12·0	.. ..	3,340	
58	12.30	Ober Tömös	2,740	
	13·15	.. ..	2,400	
	13·30	Also Tömös	2,240	

Distance from Ploëschti in miles.	Distance from Ploëschti in time.	Name of Place.	Height above River Danube at Giurgevo.	Remarks.
	Hours.		Feet.	watering-place in the summer months. Plentiful supply of water. The road continues its gradual descent along the left bank of the stream, passing three water mills on the right. The pine trees gradually diminish in number, being replaced on the hill sides by small oaks, birch, and hazels. The hills on the right trend away in a north-easterly direction, losing themselves gradually in low rolling plains, on a projecting, undulating slope on which are situated the four continuous villages of Baesfalu, Turkös, Csernatfalu, and Hosszufalu, with four churches (seen) and many houses. The road turns sharply to the left, and, skirting the foot of the hills on the left, passes through a village, Dirste, with a church and about 60 houses—mostly of brick—to a level arable plain, bounded on the south by the lower slopes of the Carpathian mountains, at the distance of about 800 yards from the road. Detached houses are dotted along the base of these hills, which are densely covered by small trees or scrub. The road to the railway terminus, Kronstadt, separates, to the right, from the road into the town, along which the telegraph runs. The town of Kronstadt, consisting apparently of about 1,500 houses, is shut into a valley by a detached conical hill, 250 ft. high, crowned by an old quadrangular bastioned fort of 160 metres exterior side, now enclosing a barrack. This fort has an exposed full revetment escarp 40 ft. high, surrounded at 40 ft. distance by a musketry parapet 50 ft. high, with a ditch 8 ft. deep, all of ancient construction. No guns are mounted. It has a detached powder magazine, 200 yards to the south-east. On a hill (? Kapellen) south of the town, a work is seen surmounting a high projecting peak, and on the west side of the valley containing the town are the ruins of an old castle. Kronstadt contains several mineral water establishments, and its commercial importance is assured by the existence of the large terminal station of the Schässburg—Kronstadt branch of the main Hungarian railway.
	14·0	.. ..	2,040	
	14·10	Dirste.	1,960	
	14·20	.. ..	..	
72	14·30	Kronstadt. (Brassó)	1,780	

G. E. GROVER, *Captain, R.E.*
G. A. COCKBURN, *Lieutenant, R.E.*

Lieut.-Colonel R. Home, C.B., R.E.

PUBLIC RECORD OFFICE

Inclosure 4 in No. 32.

ITINERARY OF ROUTE BY THE AUSTRIAN—HUNGARIAN STATES RAILWAY FROM KRONSTADT (BRASSO) TO SHASSBURG (SEGESVAR).

Passed over on the 26th February 1877, by Captain G. E. Grover, R.E., and Lieutenant G. A. Cockburn, R.E.

Distances in metres.		Height in feet above Danube at Giurgevo.	Name of Station.	Remarks.
Intermediate.	Total.			
		1,740	Brassó (Kronstadt)	All the approaches to this station are very bad, unpaved roads, heavy and difficult to traverse in wet weather. Double-storied brick station-house (120 feet by 60 feet). Open station without platform; goods depôt, with platform, 3 feet 6 inches above line and 20 yards long. Three small store-houses; eight sidings varying in length from 150 to 300 yards. Water supplied from pumps. The line (single), 4 feet 8½-inch gauge, is laid on transverse sleepers irregularly placed, but averaging 3 feet from centre to centre; no chairs are employed, the rails being bolted, directly, on to the sleepers by means of iron dogs. Five telegraph wires follow course of line, an extra wire being noticeable for a distance of about ¼ mile on each side of every station, apparently for signalling purposes in connection with lights and semaphores. Quitting Kronstadt the line (with telegraph wires on left side) passes over a rich arable plain, dotted over with villages and farms. Detached trees, plentiful, chiefly poplars. This plain is bounded on the east by a low range of gently sloping hills (distant about 1 mile), partly covered by detached woods, and partly open pasture land. On the west, by the lower slopes of the Carpathian mountains, the Weiden-bach (a tributary of the Aluta, 40 feet wide, rapid current, low muddy banks studded with willows) is crossed near its junction with the Tomisor-bach, by a wooden bridge about 60 feet long, and 6 feet above the water.
11,000	11,000	1,520	Botfalu (Brenndorf)	A very small station, with low gravel platform (1 foot high and 300 feet long)—one siding on the right. The village of Botfalu seen ½ mile to left. Leaving this station the line (on a low embankment) runs through swampy ground, skirting scattered thin plantations on the right, and crossing the Borzen-bach (a tributary of the Aluta, 60 feet wide, general character similar to that of Weiden-bach, above) by a wooden bridge, supported on three stone piers. Just before entering the Feldvar station the Honcorod (another tributary of the Aluta, 70 feet wide) is crossed by a wooden bridge, supported on three stone piers. The town is passed to the left, situated on abrupt mounds, with steep terraced slopes, about 100 feet above the line of rails, and 150 yards from it.
8,000	22,000	1,480	Feldvar, (Marienburg.)	A double-storied brick station-house (no platform), wooden store depôt, with platform, on left. Two sidings (300 yards long), and turntable. Large quantities of telegraph posts and wood (for fuel) stored close to station-house. Quitting Feldvar, the country through which the line passes assumes a more uneven character, and begins to undulate, forming on the left low downs (chiefly pasture) from 200 to 300 feet high, and about 300 yards distant from the line. On the right the valley is bounded by the western spurs of

Distances in metres.		Height in feet above Danube at Giurgevo.	Name of Station.	Remarks.
Intermediate.	Total.			
				a range of hills, running due north, and thickly coated with trees. The line follows the course of the Aluta (on its left bank), running on an embankment about 8 feet high, through swampy ground, interspersed with patches of arable land, and occasional plantations. Two small tributaries of the Aluta, each 20 to 30 feet wide, are crossed by wooden bridges. The first of these (the Griesbach) just after leaving Marienburg; the second (the Steinisch-bach), about halfway to the next station (Nüss-bach). The sides of these streams are revetted by hurdle-work. Two villages (Hidweg and Roth-bach) consisting chiefly of wooden houses, about 180 in each, are passed on the right and left, respectively, of line. One telegraph wire divorges from the main line about this point, leaving four, which continue to follow along the left side of the line. On nearing Nüss-bach the River Aluta (flowing between low muddy banks, edged with pollards), is seen to be crossed by a main road over a wooden bridge, about 50 feet long.
8,000	30,000	1,480	Mogyorós (Nussbach).	Village, consisting of about 300 houses, with church seen to left of line. Station, small and unimportant, having neither platform nor siding. A main road here crosses the "Aluta," by a wooden bridge, on 5 trestles, about 10 feet above the water. The line (following, generally, the course of the Aluta) passes, on an embankment about 6 feet high, through flat, and in places swampy ground, crosses a small stream by a wooden bridge, and passes a village on the right. Small brick-kilns occur at intervals, showing the presence of clay. Just before entering "Apácza" the line runs off embankment to level.
8,000	38,000	1,460	Apácza (Geist).	A large straggling village, brick station-house, 2 pumps, 2 sidings, 150 yards and 300 yards long; a wooden goods depôt with gravel platform (3 feet 6 inches high) revetted by wood. Close to the station the river "Aluta" (on the right) is crossed by a wooden bridge on 5 trestles and 2 stone abutments. The line closes on left side of valley, passing through a series of cuttings (from 15 feet to 30 feet deep) in the sides of the hills (the sections showing gravel, resting on clay). The valley narrows to one mile in width, is thickly populated (several villages being seen to the right), and appears to contain ample water and forage supplies. The adjacent hills are covered with oak scrub. The course of the "Aluta" is marked by swamps, which the line traverses, over an embankment 5 feet high, crossing two small streams by wooden bridges.
13,000	51,000	1,440	Agostonfalva	A two-storied back station-house. No platform to passenger-station; two sidings on left and one on right, each about 150 yards long. One turntable. A wooden goods depôt, with platform (3 feet 6 inches high) also of wood. Large storage of sleepers close to station-house. About 800 yards before entering the station is the junction with a small tramway (apparently about 2 feet gauge) running on a high embankment from the town of Barot (on the right), and used for transporting peat from the low ground adjacent to it. At this junction are situated several storehouses (wooden) and sidings. The tramway crosses the Aluta by a wooden bridge of 11 spans, and a main road is seen to cross the "Barot-bach" (a tributary of the Aluta) by a similar bridge of 12 spans. After leaving "Agostonfalva" the line gradually

PUBLIC RECORD OFFICE

Distance in metres.		Height in feet above Danube at Giurgevo.	Name of Station.	Remarks.
Intermediate.	Total.			
				approaches on the left a line of cultivated downs, at first about 100 yards distant and 500 feet high. Soon the valley narrows to a width of 150 yards, and the railway passes through small cuttings (from 10 to 20 feet in height), whose sections show inclined strata of marl and sand. It then crosses the river Aluta (here 150 to 200 feet wide) by a bowed wooden bridge 30 feet above the water, 350 feet long, including embanked approaches, and supported on two stone piers. The line follows from this point the right bank of the Aluta through a very narrow valley—in some parts only 80 yards wide—forming many sharp curves, as it winds through a range of hills, rising to a height of about 800 feet on each side of it. These hills are covered with woods and scrub. Just before reaching Rakos, the line emerges into a flat valley of about 600 yards in width (arable cultivation and many detached trees).
10,000	64,000	1,430	Alsó Rákos . .	Village, about 300 houses, on the right side of and adjacent to line. A small (brick) station-house. No platforms; one siding, 150 yards long. A large open storehouse and long brick dwelling-house 50 yards to the right.
				The line, on an embankment averaging 15 feet in height, approaches the right side of the valley (here, about 800 yards wide). A large village seen ½ mile to the left. Thence quitting the River Aluta, it passes through a cutting 20 feet deep, and emerges into the head of a valley, about 2 miles wide, opening up from the south, and through which the Aluta appears to flow. The main road (metalled) between Marienburg, Nussbach, and Reps, approaches and runs along left side of railway, which crosses the Honoród-bach (as does also the road) by a braced wooden bridge, and thence passes into the station of Honoród.
14,000	78,000	1,440	Honoród (Req.)	A double-storied, brick station-house (no platform), two sidings, about 150 yards long; two turntables; wooden goods-store and platform. Two wires enter telegraph station, from the direction of the town, which is seen from 2 to 3 miles distant on the left, and consisting apparently of between 200 and 300 houses.
				The line, on leaving this station, runs, in a due northerly direction, through a valley which gradually widens out, into a flat plain, about 1,500 yards in width, bounded by gently sloping hills of no great elevation (estimated at 300 feet in height), and during its passage to next station (Kaeza) crosses the Honoród, about 20 feet in width, three times over small wooden bridges, about 10 feet above the water line. The lines of telegraph (four wires) still continue to run along the left side of the railroad.
9,000	81,000	1,440	Kaeza Katzendorf	The village, consisting of about 200 houses, is seen on right, close to the line. Brick station-house, no passenger platform. A goods depôt with wooden platform (3 feet 6 inches high); two sidings. On leaving this station, line quits the main valley of the Honoród, and runs along the base of hills, forming the left side of the valley of the Kedigsbach (a tributary of the Honoród), passing over gently undulating ground dotted with farms. Village of Kedigsdorf (or Fulos), consisting of about 300 houses, seen to the right; thence through a cutting, 15 feet, and about ½ mile long, and over a small stream, spanned by a wooden bridge, 50 feet long.
				Gently-sloping, bare terraced hills gradually close the valley, along which the line (running on an embankment 5 feet high) passes, still following the course

Distances in metres.		Height in feet above Danube at Giurgevo.	Name of Station.	Remarks.
Intermediate.	Total.			
				of the Kedigs-bach, which is seen to the right. After passing through a cutting 25 feet deep its course lies between rolling hills, rising in all directions to heights of about 500 feet and upwards; thence through a cutting 40 feet deep, and afterwards upon an embankment 10 feet high, it enters the station of Benne.
10,000	94,000	1,700	Benne (Mehburg)	This village, consisting of some 200 houses, is seen about 300 yards to left of line. Station is small; one siding; no platform nor accommodation for goods.
				The line thence descends through a valley of arable land about 300 yards wide, whose sides (averaging some 500 feet in height) slope at about 8°. It then enters a cutting through clay and a tunnel of stone masonry, with brick side retaining walls, to Approaches. Length, about 500 yards. On leaving the tunnel it crosses undulating land of common waste, coated with sparse scrub, and follows along the right bank of a descending stream (the Erkedt-bach). Curving sharply to the right, the line passes through a 12-foot cutting, and winding along right side of valley, 100 feet above its "thalweg," crosses two side streams (the Nagy-patak and the Nyirospatak) by stone bridges. It then enters gorge of thickly-wooded hills, rising to a height of about 200 feet, and after crossing a small side stream by a wooden bridge enters the village of Erkedt.
9,000	103,000	1,490	Erkedt . .	A small hamlet of about 100 wooden and mud huts. Brick station-house, one siding 150 yards long, and a turntable. A pump. Goods depôt, with platform (wood).
				The line continues along the right bank of the Erkedt-bach (which is here about 20 feet wide, and runs swiftly between soft muddy banks) shut in by hills about 800 feet high, culminating in steep conical knolls.
				The valley gradually narrows to a ravine, dense woods covering the enclosing hills. The left side of railway is here revetted by masonry. The river bed (80 to 150 yards wide) is reached at a level of 1,340 feet, and the telegraph (four wires) moves to right side of the line, which crosses, thirdly, a side stream, by a wooden bridge 20 feet long and 10 feet above the water, and immediately afterwards the Erkedt-bach, by a wooden bridge on three piers, with trestle approaches, terminated by an embankment 6 feet high; after which the valley opens out to a width of about 200 yards, and the hills forming its right side gradually fall away altogether. The line crosses the river (which having joined another stream is now called the Kaisdt-bach) by a wooden bridge on five piers, 80 feet long and 20 feet above the water. The joint streams immediately after this point fall into the Great Koked river, flowing on right of line, which thence follows the course of the railway as far as Szaszsebes.
		1,340	. . . .	
		1,210	. . . .	
		1,200	. . . .	
				The line passes by swampy ground, a brick-kiln, and hop gardens, and enters the station of Héjasfalva.
16,000	119,000	1,160	Héjasfalva	A straggling village of about 350 houses, situated in low, swampy ground, and therefore (presumably) most unhealthy. The station has three sidings (two on the right, and one on the left), a brick station-house, and a goods store. Three wires from the left enter the telegraph office, whence five issue, and follow course of the railway.
				After quitting this station the sides of the valley (distant from the line, about 200 yards on right, and 400 yards on left) gradually rise, assuming a

Distances in metres.		Height in feet above Danube at Giurgevo.	Name of Station.	Remarks.
Intermediate.	Total.			
				jagged outline, culminating in rounded knolls on the right; while on the left they are low, and regular in outline.
				Passing a village (Feriháza, or Weiss-Kirchen) on its right, the line crosses a side stream (tributary to the Great Kokel) by a stone bridge 20 feet above the water; and just before entering "Shassburg," passes over the "Great Kokel" river on a wooden bridge (150 feet long, and 20 feet above the water) supported on trestles; arriving at the station, through a cutting and over a small wooden trestle bridge, spanning a chasm or channel.
10,000	120,000	1,100	Segesvár (Shassburg)	Town seen on left, emboldied in a crescent-shaped line of hills, a high spur of which juts out and encloses the valley so formed. The church is situated on this latter eminence. The station comprises a large brick house, a goods depôt (with platform), four sidings, and an engine-house. Water is supplied from pumps.

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Inclosure 5 in No. 32.

DESCRIPTION OF RAILWAY BETWEEN BUCHAREST AND VERCIOROVA.

General Remarks.

The Railway is a single line, the gauge 4 feet 8½ inches (same as Austrian, German, and French); the rails are laid on the Austrian principle—viz., spiked to transverse sleepers, rail flat based; the ballast used is shingle, the ballasting is laid over the sleepers to within very near the level of the top of the rails (the usual Continental method); the rails are fish-plated, but no chairs are used, there are no curves to speak of until the spur of the Carpathians between Prunisora and Turn-Severin is reached; the line is carefully laid out and expense avoided, there are no bridges over the railway except two (brick) between Prunisora and Turn-Severin. All roads cross by level crossings. At most of these there are substantially built station-houses in telegraphic communication. The line, as far as the hills above mentioned, is carried through a country of loamy clay, which, though standing well on being cut into at first, appears to give much trouble by slipping in the cuttings, so much so that most of the slopes are strengthened by groins of wattle work. All the stations are built on ground practically level, and the siding accommodation, though small at present, could be easily enlarged, in fact, at most of the stations there appears to be provision made for so doing, evidently to meet the increased traffic when the line will meet the Austrian railways at Verciorova. There appears to be no heavy traffic; the only traffic at present being the transport of firewood, numerous depôts of which are situated at the various stations along the line. The personnel of the line appear to be all Germans. The stations are nearly all built on one model, a square block, one-storied and well built, with much more accommodation than required by the very limited traffic of the line. There is only one train per diem from Bucharest to Turn-Severin, and two from Bucharest to Pitesti. Although the railway is open as far as Verciorova, Turn-Severin is practically the terminus at present. The vulnerable points in the line from the Austrian frontier to Turn-Severin are the numerous high cuttings in the faces of the hills in rock. These might be blown in on the line. Beyond this the large lattice-girder bridges over the rivers would be the probable points where the railway would be destroyed by an enemy. There is one very sharp curve and several moderate ones on the line where it crosses the

spur of hills above mentioned, as well as some very steep inclines. There is not a single tunnel.

Men are still at work at the cuttings in the hills between Turn-Severin and Verciorova. The rock is limestone, and does not appear to want much blasting.

W. A. H. HARE, *Lieutenant, R.E.*

Inclosure 5 in No. 32.

DESCRIPTION OF THE RAILWAY BETWEEN BUCHAREST AND TURN-SEVERIN.

Distance in English miles.	Description of Railway and Country.	Stations.	No. of Telegraph wires.
	Country flat, open and cultivated, railway carried on slight embankment above level of surrounding country; no cuttings or embankments.	*Bucharest.*—A large well-built station, with numerous sidings, engine-shed, tanks, workshops, stores, &c., situated on the west of the town. Approach to railway from town by large road. Space round station clear, and room for construction of extra sidings, &c.	
5½	Railway branches to Ploesti .. No cuttings or embankments.	*Chitila.*—Small station, small siding accommodation.	5
14½	.. ..	*Cioeneseti.*—Small station with small siding accommodation.	5
22½	No cuttings or embankments ..	*Gheryani.*—Small station and siding accommodation.	5
(25) 25½	Two-span bow iron-girder bridge over small river, spans about 30 feet each.	*Tilia.*—Good station, with fair amount of sidings, large firewood depôt and depôt of rails, sleepers, &c. Room for extra sidings.	5
(32)	Small wooden bank bridge over stream about 30 feet wide.		
(34)	Bow iron-girder bridge, one span, about 40 feet or 50 feet, over stream, deep banks.		5
(37)	Small bank bridge, about 20 feet span, over stream.		
42½	.. ..	*Gaesti.*—Town to the east of railway; large station; good siding accommodation; room for more; depôt rails, sleepers.	5 Extra wire from station to town.
(47)	Small iron bow-girder bridge over stream, 30 feet or 40 feet span.		
53½	.. ..	*Leordini.*—Small station	5
(49)	Two-span bow-girder bridge over stream, 30 feet or 40 feet each, steep banks (muddy).		
(60)	Small wooden bank bridge, about 15 feet or 20 feet span.		
62½	.. ..	*Goleshi.*—Small station	5
(64)	Bow iron-girder bridge over river, several spans, channel about 200 yards broad, river at present about 80 yards broad, liable to floods. Slight cutting after crossing bridge.		
(66)	Small wooden bank bridge over stream, deep bed.		
(66½)	Stone single-arch bridge over deep bed of small stream.		
(66¾)	Single small bank wooden bridge over stream.		
67	.. ..	*Pitesti.*—Large station and siding accommodation with room for more; depôt, rails, and sleepers. The station forms a terminus for both lines entering it, and is not a "through" station; engine shed, tanks, ground level, and clear near station.	5
78	Slight cutting		

Distance in English miles.	Description of Railway and Country.	Stations.	No. of Telegraph wires.
	.. ..	*Costesti*, small station	4
80 (82)	Lattice girder-bridge, about 70 yards span over river, slight cutting directly after, 100 yards long, then very slight embankment. Cutting and embankment both slight.		
90¼ (92)	.. .. Lattice girder-bridge over river, about 80 yards span, stream only about 20 feet or 30 feet wide; slight embankment after crossing.	*Stobrici*, small station	4
		Corbu, small station	4
96¾ (97)	.. .. Lattice girder-bridge, about 150 yards, over small stream in wide channel; after which, country becomes more undulating, and the railway passes a succession of slight embankments and cuttings.		
(100)	Lattice girder-bridge, about 80 yards, over slight stream in wide channel. Cutting about 30 feet deep directly after.		
		Poteasa, station with good siding accommodation.	4
103¾	.. ..		
(105)	Embankment; small bridge over stream.	*Slatina*, large station with good siding accommodation and room for more; sheds and tanks.	4
117¼	.. ..		
(120)	Series of slight cuttings and embankments, crosses flat valley on embankment 30 feet high, with small bridge for stream.		
(124)	Lattice girder-bridge over two arms of river, running in a channel about 200 yards wide, liable to floods; bridge about 30 feet above water level; embankment at each end.		
(124)			
127¾	.. ..	*Piatra*, station with small siding accommodation, but room for more.	4
	Very slight cuttings and embankments.		
135¼	.. ..	*Balsa*, small station with small siding accommodation.	4
(136)	Lattice girder-bridge with embankment at each end, over flat valley and river; bridge about 200 yards long; river slight in broad channel, followed by cutting about 20 feet deep, then an embankment about 40 feet high, with small bridge over stream in flat valley; deep cutting about 40 feet deep.		
(144)		*Pelleti*.—Small station, with small siding accommodation.	4
146¼	.. ..		
	No cuttings, &c., worth notice.	*Craiova*.—Large station, with good siding accommodation, sheds, tanks, with room for extra sidings, &c.	4
151½	.. ..		
(158)	Lattice girder-bridge, about 200 yards long, over stream in flat valley, embankment at each end, stream small in broad channel, liable to floods. Bridge about 30 feet over water level.		
		Tsabitza.—Small station.	4
160¾	.. .. No cuttings, &c., worth notice.		

Distance in English miles.	Description of Railway and Country.	Station.	No. of Telegraph wires.
165¾	.. ..	*Cotofeni*.—Small station, with small siding accommodation; room for more.	
	Cutting followed by high embankment over flat valley, with small bridge over stream.		
172¾	.. ..	*Bacuri*.—Small station, with small siding accommodation.	4
	Flat country partially flooded. Railway carried on slight embankment, about 8 feet or 10 feet high, above surrounding country.		
177	.. ..	*Filiasi*.—Good station with siding accommodation, with room for extra ditto.	4
	Slight cutting and embankment.		
(180)	Girder bridge, about 40 feet span, over stream.		
(182)	Lattice girder-bridge, about 250 yards long, over river with rapid stream. Country open, flat and wet. Railway carried on slight embankment.		
185	.. ..	*Bulcovel*.—Small station, with small siding accommodation.	4
	Country flat and partially flooded. Railway carried on slight embankment.		
(188)	Lattice girder-bridge over broad channel of river with small stream. Bridge about 200 yards long, embankment at each end.		
191¾	.. ..	*Sicheria*.—Good station, with good siding accommodation and room for more.	4
	Country flat, railway carried on slight embankment; small girder bridge over stream about 50 yards long.		
201¾	.. ..	*Tismea*, small station with slight siding accommodation.	4
	Country flat, but dry. Small girder bridge over stream.		
207¾	.. ..	*Prunisora*, good station, with good siding accommodation and room for extra ditto.	4
	Country open and flat; country slightly undulating.		
	Small cutting and bridge over stream, country gets hilly, cutting about 40 feet deep, embankment about 30 feet high, with stone bridge over road. Embankment and bridge over road; high embankment at 50 feet, followed by cutting about 30 feet deep.		
	Country more undulating.		
213¾	Country after Palota very hilly and railway descends to the Danube by steep incline, numerous cuttings and embankments, some very	*Palota*, small station	4

Distance in English miles.	Description of Railway and Country.	Station.	No. of Telegraph wires.
	formidable; many bridges and culverts over mountain streams, which, apparently, sometimes bring down large quantities of water.		
(250)	Two-span lattice-girder bridge, over shallow river. Bridge about 15 feet above water level, span about 50 feet; followed by a wooden bank bridge, and several stone small bridges and culverts.		
256	.. ..	*Vercicrova.*—Large station, with much siding accommodation. A depôt of railway matériel built near bank of river on level ground. Railway ends.	4

N.B.—The bracketed distances are approximate. The distances between the Stations are taken from the Railway Time Tables.

W. A. H. HARE, *Lieut. R.E.*

15*th March* 1877.

Inclosure 6 *in No.* 32.

REPORT ON THE IRON GATE PASS.

There is an excellent high road between Turn-Severin and Orsova, which crosses the frontier at Vercicrova. It follows the water's edge, and runs parallel to the railway, which ends at the latter place. In the town of Turn-Severin itself the road is much neglected. The hills on the north bank of the Danube fall abruptly close to the water's edge. The whole road is practically on the level, following the river bank; there are a good many small stone and brick bridges and culverts over the many mountain streams, and one long and rather neglected wooden *trestle* bridge over the River Cerna, close to Orsova. The road has been well laid out and constructed, and is kept in a good state of repair, especially on the Austrian portion, and is broad throughout.

Orsova is a large straggling but well built town of about 3,000 inhabitants and a small garrison of infantry, the streets are very wide and badly kept. There is a large quay space along the river, where numerous large steamers are laid up during the winter months.

This place would form an important depôt should any military operations take place through this pass.

Two roads lead from this place into Austro-Hungary, one following the course of the river, and which is a continuation of, and in every way similar to, the road from Turn-Severin, and another to Karansebes, *via* the valleys of the Cerna, Bela, and Jemes rivers.

The former reaches the Austro-Hungarian railway system at Bazias, and the latter the same at Karansebes*. The road to the latter place is, in many places, in a very bad state in the winter, being more or less covered with snow where it crosses the mountains near Jeregova.† The road has been carefully laid out and constructed, the gradients are moderate, and the width sufficient to enable two of the country carriages or diligences, with four small horses abreast, to pass easily in the narrow parts. There is but very little traffic.

A railway from Karansebes to Orsova is being constructed. It generally follows much the same line as the road, and is a work of great undertaking,

* Near Mehadia a road leads into the railway at *Kukuidja*. It is little used, and is a bad road.

† Two assistance of oxen had to be obtained to drag the post wagon I travelled in, on more than one occasion.

the slopes of the hills being generally exceedingly steep, and the watercourses numerous, and running in deep gorges. It is expected to be open in two years' time. No work has been done between Orsova and Vercicrova, but as this is an easy bit of engineering it is postponed for the present. Several large viaducts, in stone, are in process of construction in the valley of the Jemes and many of the cuttings will be of great depth in the sides of the hills. The line will be single, the bridges mostly of stone, and some of the curves and gradients severe.

W. A. H. HARE,
Lieutenant, R.E.

16*th March* 1877.

No. 36.

LONDON,
11*th April* 1877.

Sir,

I have the honour to forward a report by Captain Anstey, R.E., on the state of the Russian Army on the Pruth and the feeling in Russia on the War Question. Captain Anstey has had a very difficult and delicate mission to perform, and I think he has carried out his instructions in a very creditable manner.

I have the honour to be,
Sir,
Your most obedient servant,
R. HOME,
Lieut.-Colonel, R.E.

The Inspector-General of Fortifications.

Inclosure in No. 36.

LONDON,
4*th April* 1877.

Sir,

I have the honour to report that following the instructions I received from you in the month of February 1877, I left Constantinople on the 5th of that month in a steamer for Sevastopol.

After inspecting the British cemeteries, the repairs to which were completed by me in the previous year, I proceeded to Yalta, to visit friends, and in their company went to Simpheropol, where the head-quarters of the 10th Army Corps are now stationed. During the period of my enforced stay in the Crimea (for I was unable to leave for nearly three weeks as the line was blocked by snow, and no steamers were running to Odessa), I had the opportunity of seeing portions of the Cavalry and Artillery, but the weather was so unfavourable that no Infantry were paraded.

Commanding 10th Corps.

The Corps Commander is His Highness Prince Moronzoff, a healthy and powerful man of about fifty-five years of age, much liked by officers and men, but not in general credited with great military genius. His appointment to the command of the 10th Corps may be sought in the fact that he has considerable influence over the Tartar population, and is a very large landed proprietor in the Crimea. The two divisions of Infantry at present in the Crimea are the 13th and 34th, commanded respectively by Lieut.-General de Richter and Major-General Baron Korf.

The Chief of the Staff is Colonel Schtscherboff Nofedovitch.

The 10th Division of Cavalry attached to the Army-Corps is commanded by General Dedioulin, said to be the best Cavalry Commander in Russia, and the two Brigades are under Major-General Netschaeff and Major-General Vaxovski.

Of the Cavalry I saw the 10th Regiment of Dragoons, 593 strong, commanded by Baron Timen, and 2 squadrons of Tartar irregulars.

The former I saw inspected on their arrival from a station beyond Eupatoria, distant from Simpheropol about 180 versts, and they had made the march in six days, and both men and horses were in very good order on their arrival. The weather during their journey was very inclement. I was told by

their Colonel that they had not been able to find shelter for more than one-third of the men every night, and that the remaining two-thirds had bivouacked sleeping by threes. One man lays his cloak on the ground, and all three sleep on it, covering themselves with the two other cloaks. They marched past as Cavalry, and afterwards as Infantry—*i.e.*, two-thirds dismount, their horses being held by the remainder, and as they carry the bayonet in addition to the sabre, the rifle being the same as that served out to the Infantry, they are supposed to be able to act as such in every particular. They marched well, fell in as Infantry very quickly, and as quickly mounted their horses on the given signal.

The 17th Battery of Horse Artillery, which had also made the same march as the Cavalry, arrived two or three days later, and presented an admirable appearance. Russian officers all consider the Artillery to be the best arm in their service. The commander of the battery is Colonel Michael Mamaeff.

On the 27th February I left Sevastopol in a steamer for Odessa, arriving there on the 28th.

Received by Grand Duke Nicholas.

His Imperial Highness Grand Duke Nicholas, commanding the "Active" Army of the Pruth, received me graciously. He was still suffering from the effects of his severe illness but was improving in health rapidly. He permitted me to visit the Cavalry quartered in the villages near Odessa, and ordered Major Coumbary, one of General Semeka's Aides-de-Camp, to accompany me on my visit. On Thursday, the 8th March, we drove to the little village of Gildendorf, a German colony, where two squadrons of the 7th Hussars of "White" Russia were billeted. The large sheds attached to almost every cottage afforded good accommodation for the horses, and the men seemed to make themselves fairly comfortable. Through the kindness of the Colonel, von der Launitz, I was shown everything, and I must record that all I saw seemed good. The horses were of a good stamp and in good condition, standing I estimated on an average 15 hands 1½ inches, and each one has a rug made of a species of canvas—woollen rugs are not used. The saddle has no stuffed pommel, but the wooden tree is laid on thick felt, folded in four. The men had on their new clothing, which is always worn when entering on a campaign, and there were in store among other clothing, &c., quantities of new goat-skin overcoats.

Visited the 7th Hussars.

The Hussars are armed with the lance and carbine, *i.e.*, the front rank have lances and revolvers, while the rear-rank have carbines. The carbines are of the "Berdan" pattern weighing 8 lbs., and the revolvers are of the "Smith and Wisson," of Springfield, pattern. They are breech-loading and provided with an extractor, which, after pushing out the cartridge, snaps back to its normal position.

Troops around Odessa.

The troops in and around Odessa are chiefly those forming the 7th Army Corps. The 14th and 15th Divisions belonging to this Corps are commanded by Major-Generals Veriofkin and Goremikin respectively, and the Corps Commandant-General, Barclay de Folly Weimarn, has been ordered to take command of one of the Corps now forming in the neighbourhood of Moscow. Both this and the 10th Corps are under the orders of General Semeka, whose head-quarters are in Odessa. While I was at Odessa an "alarm" was sounded and all the troops forming the garrison were supposed to turn out, but this could hardly have been carried out to the letter, as on their marching past the palace of the Grand Duke, I counted but 5,000 Infantry, 200 "Gendarmerie," and 24 field-guns, each having 4 ammunition carts. The guns had teams of 6 horses, and the ammunition carts, which were on two wheels, were drawn by a pair of horses each. With reference to the "active" army immediately under the orders of the Grand Duke Nicholas it numbered in the month of February about 139,000 men of all arms. Having heard this from various independent sources I think it may be true. The Army-Corps comprising it were the—

The active Army.

8th,	Commanded by	General Theodore Radetzki,	born	1820.
9th	"	Baron Krudener	"	1811.
11th	"	Prince Schaxobski	"	1812.
12th	"	Lieut.-General Vanovski	"	1822.

Generals Radetzski and Krudener seem to be the most highly thought of. General Nepokoichitski is the Grand Duke's Chief of the Staff, and associated with him is Colonel Lebitski.

General Radetzki's career.

General Radetzki was born in the Government of Kazan, of noble birth, and began his career as an officer of engineers. He served in that capacity in Warsaw, in the year 1841, and was sent shortly after to the Caucasus, where he passed the major portion of his service, earning a reputation for extraordinary courage and military capacity. In the year 1844 he took an active and brilliant part in the expedition, first to Xubar and thence to Chertme, where Shamyl was defeated and nearly made prisoner. He distinguished himself in almost daily encounters with the enemy, and was raised to Lieutenant's rank in July 1845. The same year he received the 3rd class order of Stanislav for his part in an action against the mountaineers on the heights of Zakan-Bak on the 27th July, attracting the especial attention of the then Commander-in-Chief, Prince Woronzoff, by remarkable bravery shown in a reconnaissance of the position of the Anchinler mountains, stormed by the column under General Passek. He then passed through the Academy of the General Staff. He passed with *éclat* his course of study, and on terminating it was made Staff-Captain, and then was made Captain on the General-Staff of the Field Army in 1849, and in 1852 was made Adjutant-General of the Army of the Caspian provinces. In 1853 he was promoted to the rank of Lieutenant-Colonel and named Chief of the Staff to the same force. He distinguished himself frequently by extraordinary bravery during this period of his service, as for instance, in 1852 against the Lesgian mountaineers, and in 1853 against those of Daghestan, and again and again in the same year in the district of Dorchinsk, which services were testified to by frequent marks of Imperial favour. He was promoted to Colonel's rank in the year 1857 for his share in the capture of the principal brigands and outlaws of the Caucasus, at Tabassar, in 1855. In 1858 he was appointed to the command of the Infantry Regiment of Daghestan, and for his exploit of the 16th and 17th June in crossing the Andisk-Kois in face of a strong force of the enemy, was decorated with the 4th Class of the Order of St. George, and for other services in the summer of 1859, received a gold sword of honour "for bravery" in 1860. In the same year he was made Chief of the Staff to the Army of the territory of Tersk, and was made Major-General in 1861. He then in turn commanded the 38th, the 21st (in the Caucasus), and the 9th Infantry Divisions.

Baron Krudener's career.

Baron Krudener was born in the Government of Livonia. He entered the School of Military Engineers at the age of 16, and received his first commission at the age of 18. In the year 1834 he entered the Staff School, and served on the Staff from the year 1836. He was promoted for exceptional merit to the rank of Lieutenant-Colonel in the year 1846. He served as Quartermaster-General in the Hungarian campaign in the year 1849, and received the rank of Colonel for his services, and was appointed to the command of Prince Eugene of Wirtemberg's regiment. He was a Major-General in 1859, and got his first command of the 27th Division in 1863. He served in the Crimean campaign, though without the chance of displaying his exceptional military qualifications. He served with distinction in the campaign in Poland in the year 1863.

Prince Schaxovskoi entered the Artillery of the Guard at 25 years of age. He saw some severe fighting in the Caucasus in the year 1848, and in the year 1850 took an exceptionally brilliant part in the dangerous expedition against the Tchetchenians. For the services rendered on this expedition he received the gold sword of honour, inscribed, "for bravery," and in 1854 was promoted to Colonel's rank, and named wing Adjutant to H. I. Majesty. He became Major-General in 1860, Lieutenant-General in 1868.

With General Vanowski's career I am unacquainted.

General Nepokoichitski's career.

The Chief of the Staff, Principal Aide-de-Camp, Arthur Admnovitch Nepokoichitski, is 64 years of age, and is the son of the Marechal de Noblesse, of the district of Slutz. He was educated in the Imperial "Corps des Pages" (Kadetten Corps), and entered His Majesty's Body Guard at 18 years of age, in the year 1832. A year later he entered the Staff School. He subsequently served with the 5th Army-Corps, and in the year 1835 was promoted to the general Staff of the Army as Captain, serving as Quartermaster-General of the 14th Division of Infantry, and subsequently he was appointed Adjutant-General of the 5th Army-Corps. That was in 1839. His active service dates from the year 1841 in the first campaign against the inhabitants of the Caucasus. For his services he was decorated and promoted to the rank of Lieutenant-Colonel. His second campaign was in Daghestan in 1843, in which he again served with

distinction. He served against the Tchetchenians subsequently. He served with the 5th Corps in 1853 against the Turks. Against the same with brilliancy in 1854, when he was promoted to the rank of Lieutenant-General, and made Chief of the Staff to the Army of the Crimea. He became a full General in 1864—i.e., after 36 years' service.

He seemed to me to be a strong, healthy man, and from what I observed in the ante-chamber of the Grand Duke, was evidently on good terms with His Imperial Highness's Staff.

Major-General Levitzki, acting with General Nepokoichitski on the Staff of the Army of the Danube, is 42 years of age. He was born in the Government Vitebsk, of noble blood. His first commission was dated 1853, after passing through the Staff School at Nicholaieff, and some years later he was appointed, when still a Captain, to the Staff of the Guards, in the district of St. Petersburg. At the end of the year 1866 he was appointed Chief of the Staff to the 2nd Division of Cavalry of the Guard. He turned his attention about this time to imparting instruction in military matters, and was appointed in 1870 Assistant Professor of Tactics to the School of the General Staff at Nicholaieff. He held Colonel's rank at that time. In the year 1874 he was made Wing Adjutant to His Majesty, and was appointed Senior Professor of Tactics at the Academy, where he had served as Assistant. In the year 1875 he was appointed to the command of the Mounted Grenadiers of the Body Guard. His appointment as Adjunct to General Nepokoichitski on the General Staff of the Army has given universal satisfaction, as he is acknowledged to be a high authority on military matters. The speedy commencement of hostilities was looked on during my visit as quite certain, and the troops of all arms were being carefully exercised, and by frequent marches hardened to prepare them for the coming campaign. This His Imperial Highness himself told me, and if a march made by a cavalry force a few days before my arrival in Odessa may be taken as an index of the general fitness of the army, with regard to locomotion, the object in view must indeed have been attained. The march was undertaken by General Nepokoichitski's orders from Kischenieff and its neighbourhood to Odessa, with the intention of doing the entire distance—over 170 versts, or 135 miles in two days. The force was composed of two squadrons of the Grand Duke's own Cavalry Division, from Kischenieff itself, and the 2nd Brigade of the 11th Cavalry Division from Grigoriopol and its neighbourhood, formed of the 11th Hussars, the 11th Regiment of Don Cossacks, and No. 4 Cossack Battery of Horse Artillery.

Long Cavalry march.

Colonel Dselukoff commanded the two squadrons of the Grand Duke's Guard, and General Petroffski the force from Grigoriopol. The 11th Hussars Colonel Ibraginoff, the 11th Cossacks, Colonel Popoff, and the battery Colonel Miller.

General Nepokoichitski in person commanded the combined force.

They marched without baggage. The squadron from Kischenieff started at 7 A.M. on the 11th February, made an hour's halt after doing 55 versts, reaching the village of Baraguseh, 76 versts from Kischenieff, at 8 P.M., where they were quartered for the night on the inhabitants. It had been the intention to complete the march (93 versts) the following day, but in face of the evident impossibility to arrive before dark, the General reluctantly abandoned the idea and countermanded his former order, making the distance in two marches instead. The Grigoriopol force left at 7 A.M., the Cossacks cavalry leading, after them the battery, the Hussars bringing up the rear. At Tiraspol, 40 versts from Grigoriopol, a two hours' halt was made. The German Colony of Strasburg was reached at 7 P.M., the distance marched being nearly 90 versts. The next day the two forces joined at the village of Manheim, and marched together the remaining distance. This day's march was 52 vests. On arriving at Odessa the following day it was found that of the Brigade the Hussars had three horses with sore backs; the Cossacks 11, and the Battery 2. From various causes the number left behind, and who marched in later (chiefly through loss of shoes) was of the Hussars 2 horses, of the Cossacks 4. Of men—Hussars 3, Cossacks 4, and the Battery 2.

Sore backs.

I was unable to ascertain the exact number of each arm. Of the officers to whom I addressed enquiries on this subject none seemed to have any knowledge whatever, and the state of the country during my visit was such as to render personal investigation impossible, even had my somewhat exceptional

position not rendered enquiry of every description a delicate matter. It may be *à propos* to mention that at the time of my visit to Odessa, the general feeling was most adverse to England, and found expression in the treatment accorded to individual Englishmen. This is by no means the normal feeling in Russian society. It differs widely from the deep seated national hatred to the Germans, and owes its origin to the fact that Englishmen and everything English are held in such esteem. The good opinion of England is far more highly prized than that of any other nation, and feeling themselves thwarted, believing that their feelings find no echo in English hearts, a bitter hatred has, for the time only it may be hoped, replaced all other sentiments and finds expression in society towards any of English extraction.

Strong feeling against the English.

On the evening of the 13th March I left Odessa, proceeding to Kischenieff.

Kischenieff.

Kischenieff is a large town, containing about 80,000 inhabitants. The streets are not paved though on each side a species of footpath has been made or improvised. A sharp frost had hardened the surface sufficiently to enable me to drive about the town, but the state of the country preventing me from visiting any of the villages where the troops are quartered in the neighbourhood, I stayed but one day. I noticed 137 Pontoon wagons, and chanced to see about half of them in movement, a march out for practice. They are, as far as my cursory inspection would enable me to judge, on the Austrian system. They seem new, the harness was new, and both men and horses seemed a little raw to their work. They were well horsed, with teams of six—four abreast and two leaders—the wagons having a pole, and each wheeler attached to a swingle-tree, and not immediately to the splinter-bar. The swingle-tree for the leaders is not attached to the end of the pole, but to a double rope running through a ring at the end of it, and fastened to the centre of the splinter-bar. I noticed three batteries of Artillery, and saw some of their horses picketted out. They were of about the same stamp as those I saw in the Crimea and at Odessa. I saw neither Infantry nor Cavalry paraded, nor were there as many in the streets as I should have thought; on the other hand there were (to me) countless country carts, with three ponies abreast, driven by soldiers. They hold but little, but are very light, an advantage where deep mud is the one obstacle to movement. I may here mention, that the health of the army has been excellent throughout the whole winter; all my informants are unanimous on this point. I was shown the "sick state" of one Army-Corps of 38,000 men, and there were but 337 cases of actual illness necessitating medical attendance in hospital. The total on the sick return was somewhat over 900, but as I have said, only the above number were grave cases. The remainder were doing light duty. At Ungeni, on the Pruth, the *bonâ fide* Russian railway ceases, and 20 minutes' drive brings one to the Roumanian station on the other side. The line is laid connecting the two countries, but at the time of my visit they had not yet commenced running through trains. The river is crossed by a lattice girder bridge, laid with a single line of railway, and the Russian gauge is adhered to as far as Jassy, where the ordinary European gauge is dovetailed into it.

Pontoons.

With regard to the Russian railway system I have every reason to think it in good working order.

Railways.

There are new locomotives all ready to the number of 450, and they, as well as the newer wagons, can be arranged to take the gauge of the European railways.

The double lines of rail are—

Double lines.

Moscow to St. Petersburgh.
" Rinschsk
" Toula
St. Petersburgh to Dinaburg
Dinaberg to Riga.

All the others are single lines. With regard to the transport of troops on the single lines I know that the Losovaya—Sevastopol line can run eight trains of 1,000 men a-day, and as this line is well managed in its traffic arrangements, that amount may be taken as a fair average for the other railways.

With regard to the regimental transport for Cavalry, each squadron has

Regimental transport.

one baggage wagon, in which is carried the day's rations for the men, an anvil and shoeing tools, the heavier cooking utensils, &c., while every third man has a copper-saucepan fitting over the end of his valise. The Officers have one wagon told off to them, and there is a forge wagon.

Surgeons.

Great exertions have been made to get a sufficient number of surgeons. The principal Medical Officer of Odessa told me that, at Kremenchuk, on the Dneiper, there were collected 450 surgeons, many of whom had not completed their course of study, and that in May 500 more were ordered down who have as yet received only theoretical instruction, having only passed the fourth class. He added that they would never have a chance of properly completing their studies.

Batteries at Odessa.

From the hasty glance I had of the guns in the newly-erected batteries at Odessa, I judged them to be about 12 tons. Consul Stanley reported on these defences in February, and since that time another battery has been commenced on the eastern side of the Quarantine Harbour. These batteries, though numerous and heavily armed, could offer no effectual obstacle to the destruction of the town should that be the object aimed at in an attack by a hostile iron-clad fleet.

Torpedoes.

With regard to torpedoes no one could tell me if they were really laid down or not, but as an experiment was made, and a lighter successfully blown up during my stay at Odessa, and about the same time a boat named "Inkermann" left Nicholnieff with 1,000 torpedoes on board, it is very possible that at this date they may have been placed.

Drive from Ungeni to Jassy.

On leaving Russian territory at Ungeni I was unable to avail myself of the railway to Jassy, and drove there in a country cart. The drive was 5 hours. For 2 hours across fields, the surface having been sufficiently hardened by frost, and for 3 hours along a good paved road on a raised causeway. Paved roads have no existence in Russia, and, from my experience of the roads (so called) round Odessa and elsewhere, it is evident that neither cavalry nor infantry could move until the country be quite dry. I was told that horses falling down had been known to be smothered by the mud before they could be rescued.

Mr. Sanderson, Consul at Galatz, did all in his power to afford me every facility for gaining information. I drove, in his company, to see the batteries in course of construction, for the defence of the bridge over the Sereth. It is said that these works were commenced at the instigation of Russian officers, who came to inspect the Roumanian rolling-stock, of which they condemned a large portion. The nearest battery to the bridge had been only just commenced. It was a sunken one, for three guns, and is situated on bluff, about 40 ft. above the low-lying land near the river, and is about 600 yards from the bridge. This bridge is a lattice-girder one of double span.

Roumanian batteries to defend bridge over Sereth.

The next battery is half sunken, and is for five guns; it was nearly completed. It is about 2,000 yards from the bridge, and commands the Danube and entrance to the River Sereth. A smaller work was also in progress, sunken, for three guns, and flanks the bluff on which the one last mentioned is situated.

The next day I started to visit Bolgrad, at the head of the Jalpuch Lake, to ascertain if any stores had been collected in the neighbourhood. Mr. Sanderson kindly allowed his principal clerk, Mr. Michaelopolo, to accompany me, as that gentleman had some acquaintances in the neighbourhood. Driving from Ismail to Bolgrad, I was able to judge of the hopelessness of endeavouring to move troops in Bessarabia in wet weather. I could hear nothing of stores, &c., near Bolgrad, but through a friend of Mr. Michaelopolo, the Mayor of Tartacyna, I ascertained that at Tatar-Bonna, on the southern frontier of Bessarabia, there were 24 heavy Krupp guns, though the calibre was not known, and that there was a strong force there of all arms. Through Mr. Sanderson I gathered that between Kubei and Acherman was one division of Infantry, and at Kahul, 30 versts from the Russian frontier in Roumania, were large stores of forage.

Ismail to Bolgad and Reni.

Feeling in Roumania.

The feeling in Roumania seems to be strongly Russian, and I was told at Ismail that the Priests had rigged up new ropes to ring in the Russians when they should cross the frontier.

Feeling of Russian people.

The feeling of the Russian people with regard to the prospect of war is of so mixed a character, that a preponderance on one side or the other is difficult to decide. Should war be declared, the people would, I am convinced, bear the

burden with patience, and would not hesitate to sacrifice much for success against their hated enemy the Turk.

With regard to one section of the community, however, the feeling is by no means doubtful—viz., the better class of merchants in all the large towns. In war this section sees utter irretrievable ruin: but at the same time would prefer immediate war rather than the wearing anxiety attendant on another year's uncertainty, at the same time paralysing every effort at commercial enterprise. Delay would in their opinion bring no less certain ruin without having perchance the excuse of actual war for their inevitable failures.

The upper middle class, *i.e.*, the lower class of nobility, are perhaps those most favourably disposed to active measures against Turkey. This section is the most unselfishly jealous of the honor of their country. Every check that Russian diplomacy has received since the outbreak of the insurrection in Herzegovina, every failure experienced in Servia, &c., during the war, is looked on by them as so many (to quote good information I received at Odessa) "*slaps in the face*" for Russia.

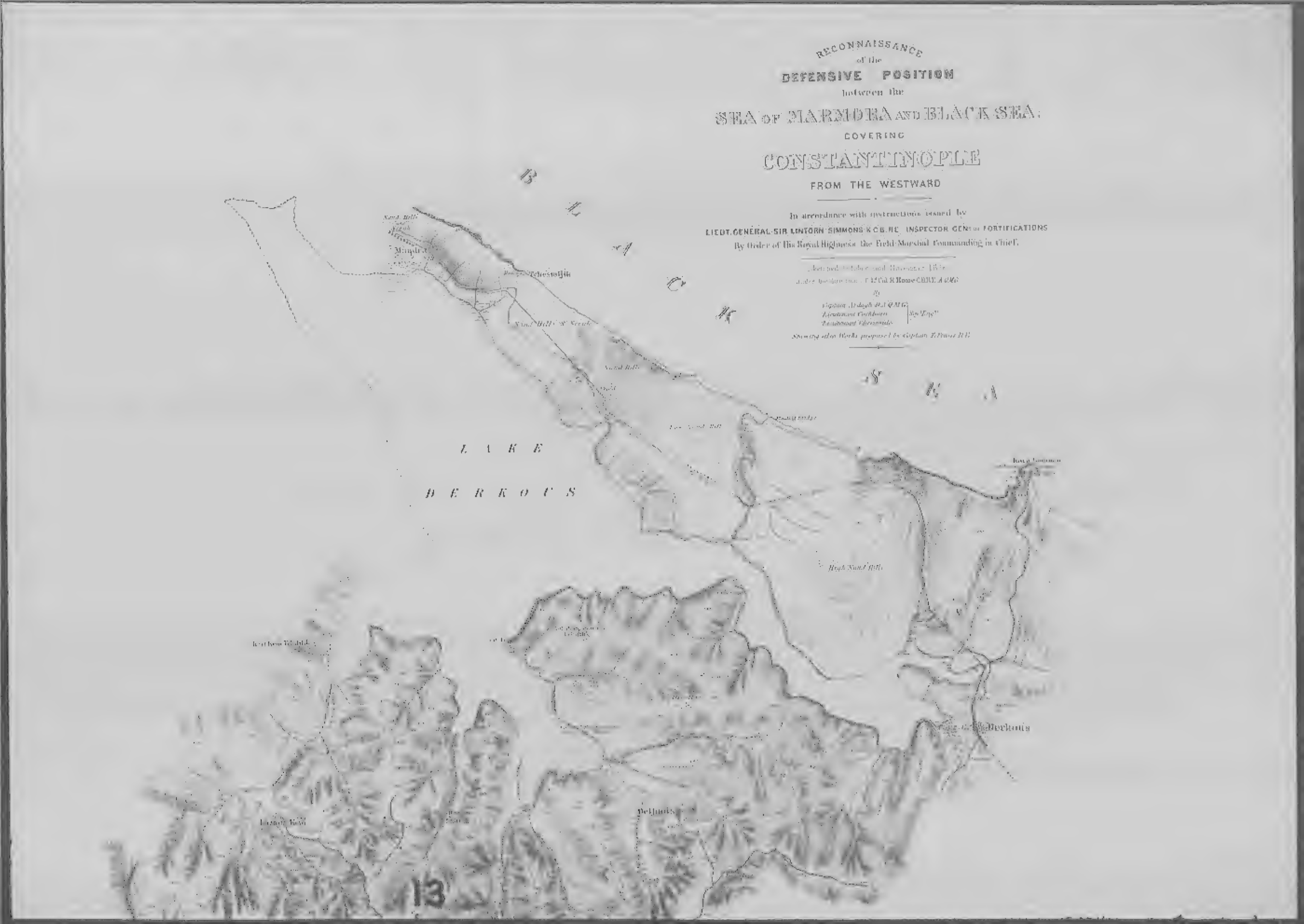
The army, well equipped and organized, is, I believe, while commanded by their beloved Chief the Grand Duke Nicholas willing to fight, but it is the opinion of people competent to judge of this matter that were the personal prestige of the Grand Duke removed, either by illness or any other cause, it would be impossible to replace him. By his personal influence he unites in common action the heterogeneous elements which, in a political sense, form the higher grades in the Russian Army.

The Pan-Selavonic Societies are largely made up of the worst elements of the lower middle class, which, while having nothing to lose, as a rule, might gain by any change, either successful or disastrous to their country; and there is no doubt but that they would shamelessly use any chance which might ultimately turn to their own selfish advantage.

The peasantry have no opinion whatever. They are very patient under all mischances, and it is generally believed that they will give no trouble, even under exceptional pressure from want and hunger.

I have the honour to be,
Sir,
Your most obedient servant,
T. H. ANSTEY,
Captain, R.E.

Lieut.-Colonel R. Home, C.B., R.E.


RECONNAISSANCE
of the
DEFENSIVE POSITION
between the
SEA OF MARMORA AND BLACK SEA;
COVERING
CONSTANTINOPLE
FROM THE WESTWARD
In accordance with instructions issued by
LIEUT. GENERAL SIR LINTORN SIMMONS K.C.B. R.E. INSPECTOR GEN. OF FORTIFICATIONS
By Order of His Royal Highness the Field Marshal Commanding in Chief.
BLACK SEA
LAKE DERKOUS
Mandra
Tchesmijik
Derkous
13

Yenije Keui
Lazarli Keui
Delimlisa
Marali Keui
Tchiflik
Tchamakucha
Kastanalik
Oklaly
Al Kalik Tchiflik
Urzunlu
Kyssrijaly
Lasieren
Suvbasy
Jokush
Izzedin
Kara Su
Jakkusk Dere
Babunakkush
Tozalak Tchiflik
Tchataldja Station
Kara Tépé
Pasture
Cultivation
Stony Ridge
Marshy Meadows
Open Cultivated
Oak Tree
Fountain
Windmill
Stony Ground
Shelly Limestone
Summit Level
Tozalak Dere
Kayin Dere
Bayer
Urzunlu Bayer
Tozalak Bayer
Ak Bunjar Tchiflik
Tree
Redoubt
Stone Bridge
Wood Bridge
Ford
Road
Track
Path
Telegraph
Boundary
Hedge
Ditch
Rocks
Sand
Marsh
Stream
Spring
Well
Village
Hamlet
Farm
Mosque
Church
Ruins
Tumulus
Cemetery
Bridge
Aqueduct
Tunnel
Cutting
Embankment
Level Crossing
Station
Signal
Milestone
Boundary Stone
Telegraph Line
Railway
Road Metalled
Road Unmetalled
Track
Path
Ford
Bridge
Stone Bridge
Wood

The Green represents Bush or Scrub.

TABLE OF DISTANCES FROM RAILWAY-TERMINUS CONSTANTINOPLE.	Kilometres	Miles
Makri Keui Grand Store Depot	13	8½
St Stefano	18	12
Kutchuk Tchekmedje Head Quarters	22	14½
Hadem Keui Station Store Depot	52	34½
Do Junction with New proposed Railway	53·40	35½
Jasseren Station Store Depot	65·25	42½
Junction with Tramways		
End of proposed Tramways	69·35	46½

Kara Tepe
Tchataldja Station
TCHATALDJA
Tozolak Tch
Flat Marshy Ground
Hademkeui
Moba-keui
Kara Aghatch K
Kuleshan Tch
Baghtcha-ish
Mertenek Tchiftlik
Kavatoprak Bayere
Lanakeui
Popas Burgas
Cultivated
Sirtku Tch
Esskidshi Tchiftlik
Plateau
Aktcha Burgas Tch
Taschlyk
Menoukshi
BUJUK TCHEKMEDJE
Tchakmakli
Plaghani Baghur
BACKWATER
Arnaoutkeui
Plaja
Kum Burgas
Kum Bayere
BUJUK TCHEKMEDJE
Main Road from Adrianople
1
2
3
4
5

Karatoprak Bayère
Lanakeui
Popas Burgas
Cultivated
Kuleshan Tch.
Sirtku Tch.
2
Clear and Open
Esskidshi Tchiftlik
Plateau
Aktcha Burgas Tch.
Taschlyk
Menoukshi
BUJUK TCHEKMEDJE
Broken Ground
Tchakmakli
Plaghani Baghar
BACKWATER
All Open & Cultivated
Arnaoutkeui
Plaja
Kum Burgas
Ayasma Bayère
Kum Bayère
1
BUJUK TCHEKMEDJE
Main Road from Adrianople
Kalikratia
Plateau Uncultivated
BAY OF
BUJUK TCHEKMEDJE
Tchoplida
Deep Loam Soil All Cultivated
Sandy Beach, Good Landing
Raba Burnu
SCALES